

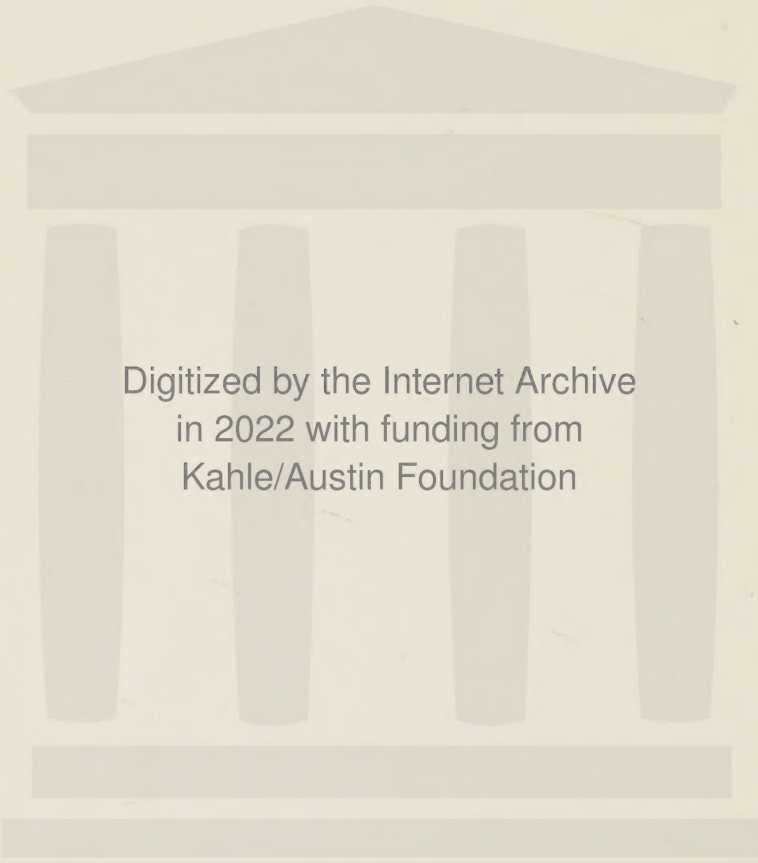


Centre for Agricultural Strategy

Self-sufficiency and food security

C Ritson

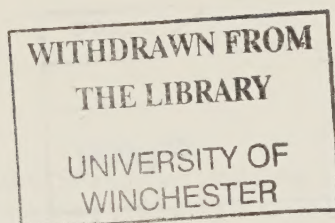
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CAS Paper 8



Self-sufficiency and food security

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The Centre for Agricultural Strategy was established by the Nuffield Foundation on the campus of the University of Reading in October 1975

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Preface

Self-sufficiency as an objective and as a means to a better way of living has, to many people, an immediate and sometimes emotional appeal. To some extent it is an ideal which stems from a natural desire for security, for a better understanding between people and for a more satisfying way of life. However, there is a danger that if carried to excess it may produce precisely the opposite effects to those desired. A determined attempt to do everything for oneself, to be totally self-reliant, may result in a degree of insularity which reduces communication and productivity, leading to frustration, boredom and a distinct loss of freedom and security.

Nowhere is the notion of self-sufficiency more actively pursued than in relation to agriculture and food supplies. It is perhaps not surprising that in Europe, which has so often in the past two hundred years suffered the ravages of war, national agricultural and food policies are usually based on the notion of attaining self-sufficiency or of increasing the current level of self-sufficiency. The UK experience of food shortages in the Second World War has certainly stimulated successive governments, in response to public pressure, to pursue agricultural and food production policies designed to reduce food imports and increase domestic supplies. Mainland Europe has a longer tradition of attaining food self-sufficiency than the UK. One of the main objectives of the Common Agricultural Policy is to maintain and in some senses increase self-sufficiency. Nevertheless, Europe has also been prominent in exploring the opportunities for communication and trade throughout the world, although to trade is the very antithesis of self-sufficiency.

This apparent contradiction is sometimes explained by drawing a distinction between food, as an essential life continuing commodity, and other goods and services which are less essential for survival. It is argued that it is necessary to be

self-sufficient for food but that it is acceptable to trade other commodities. At this point distinctions become blurred and it is not clear, for instance, whether it is desirable to be self-sufficient for the resource inputs into agriculture and food production or whether it is satisfactory to trade them. As the argument progresses, the definition of self-sufficiency becomes less and less clear. During the last seven years, and as a consequence of the declining availability of fossil fuels and minerals, many people consider the quality and security of life to have been reduced. The increase in social unrest, whether real or perceived, is considered to bode ill for future lifestyles. In this atmosphere the proponents of self-sufficiency, in all aspects of life and not least farming and food supply, have become more numerous and have pursued their objectives more vigorously.

In an attempt to clarify the desirability of pursuing self-sufficiency objectives in agriculture, the Centre for Agricultural Strategy considered it desirable to examine the meaning of self-sufficiency and the national implications of attaining higher levels of self-sufficiency for food importing and food exporting countries. Does self-sufficiency lead to a greater probability of maintaining a secure supply of food at a relatively stable price? Is there some minimum level of national food production, independent of imported resource inputs, which a country should attempt to maintain in the interests of security and survival? Is the UK above or below such a minimum level and what is the cost or benefit of attaining a higher level of production — of being more self-sufficient?

The Centre invited Christopher Ritson, formerly lecturer in the Department of Agricultural Economics and Management, University of Reading, and now Professor of Agricultural Marketing, University of Newcastle-upon-Tyne, to consider these and related issues. This paper gives Professor Ritson's response for which the Centre is most grateful. The Centre considers this paper to be a valuable contribution to its own development of UK agricultural strategy. The study involves a thorough economic assessment of self-sufficiency. Some may wish to add political, social and moral assessments and the paper provides a firm definition and elaboration of the subject from which to start. The main conclusion to draw from Professor Ritson's analysis is that self-sufficiency appears to be desirable to an extent consistent with security considerations but beyond that it may be costly and may blind us to the opportunities and benefits to be gained from trading in farm and food commodities.

John C Bowman
Director

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ABBREVIATIONS

CAP	Common Agricultural Policy
EC	European Community
FAO	Food and Agriculture Organisation of the United Nations
MAFF	Ministry of Agriculture, Fisheries and Food
OECD	Organisation for Economic Co-operation and Development
UK	United Kingdom

Background and summary of the main implications for UK agricultural strategy

Background

The 'world food crisis' of 1974–1975 re-awakened interest in the UK concerning national self-sufficiency in food supplies (Mellanby, 1975; Blaxter, 1975). The general conclusion was that it would indeed be possible for Britain to feed itself though the diet involved would be dull by present standards. Associated with the question 'Can Britain feed itself?' there was usually a belief that Britain should, if not feed itself, at least obtain a much greater proportion of its food supplies from domestic farming. In spite of the return of world food markets to 'normal' post-war conditions, UK interest in agricultural self-sufficiency has continued and has recently found political expression in the Ecology Party which links national self-sufficiency with the objectives relating to resource conservation, energy saving and protection of the environment.

This study was initiated by the Centre for Agriculture Strategy as part of an attempt to examine the question 'Should Britain feed itself?' (or, more correctly 'To what extent should Britain feed itself?') in as scientific and dispassionate a manner as agricultural scientists had approached 'Can Britain feed itself?'. It quickly became apparent that such a project would involve two stages. First it was necessary to explore the theoretical issues underlying the relationships between national objectives and alternative food import requirements. Second would be a more quantitative study, involving assumptions about the future world environment and about domestic production and distribution possibilities. Much of the argument involved in the first stage would be general, relevant to any major food importing country. The second stage would be specific to the UK.

This paper deals with the first, theoretical stage. The main body of the text, although sometimes referring to the UK, develops ideas which are generally applicable. The first and last chapters are, however, exceptions as they are directed specifically to the UK. Chapter 1 attempts to place the present self-sufficiency debate in context, by discussing the evolution of agricultural policy in the UK since the Second World

War, and Chapter 6 shows how the arguments developed in Chapters 3–5 (arguments relevant to any major food importing country) are affected by British membership of the European Community. This introduction is also an exception. It does not attempt to summarise the theoretical discussion contained in the main body of the paper but to highlight, as simply as possible, the main implications of these arguments for UK agricultural strategy.

‘Should’ versus ‘Can’ Britain feed itself

It is not possible to provide a categorical answer to the question ‘Should Britain feed itself?’ as is, in principle, possible for ‘Can Britain feed itself?’ There are two reasons for this. First, the recent concern over the relatively low level of agricultural self-sufficiency in the UK has been based on the belief that likely future developments in the world economy make it unwise to rely on imports for a substantial proportion of UK food supplies. However, opinions differ on the future course of world food prices and the appropriate contribution of domestic agriculture to the nation’s food supply is likely to vary with the predicted course of world food prices. In this study any prediction of the future world economic environment has deliberately been avoided. The paper is concerned only with the implications, for a major food importing country such as the UK, of concern over the future price or availability of imported food.

The second reason why it is more difficult to provide a categorical answer to the question ‘should’ than ‘can’ is implicit in the question itself. If an individual is asked whether he *can* buy a particular article, he simply needs to know if he can raise sufficient money. When he considers whether he *should* buy it, he faces a decision, for he must consider the alternative — what he gives up as a consequence of choosing to purchase the article.

Further, the interests of 55 million people influence a decision on whether the UK should increase its agricultural self-sufficiency. The costs and benefits associated with increased self-sufficiency will not be evenly distributed. Individuals might well give different answers depending on the way they are affected. A government decision on such an issue, therefore, requires the identification of a ‘national interest’.

Why study self-sufficiency?

In discussions concerning UK agricultural self-sufficiency, there is often confusion between arguments involving the appropriate size of the agricultural sector and arguments involving the appropriate degree of self-sufficiency. The distinction is important. The two go together in the sense that, since food consumption is increasing only very slowly, an increase in UK agricultural output increases self-sufficiency. But certain events may indicate that an increase in domestic agricultural output is beneficial, irrespective of the initial degree of self-sufficiency, be it 50, 100 or 150%. Other arguments are related specifically to the proportion of food supplies domestically produced.

Another area of confusion in the debate on the role of agriculture in the UK economy has been caused by regarding the degree of self-sufficiency as a potential problem in itself. This is incorrect. Self-sufficiency is a measure of the proportion of consumption derived from domestic farming. Varying the degree of self-sufficiency may, however, contribute to the solution of problems. Thus, a study of the question 'To what extent should Britain feed itself?' must first identify the problems with which self-sufficiency is thought (rightly or wrongly) to be associated. In Chapter 2 it is argued that the various concerns over the possible adverse consequences of being a large food importer are all related to some aspect of the price of imported food. (If imports are unavailable, the impact on the country is the same as if supplies are so expensive that none are purchased.) Three aspects of future food import prices are distinguished, namely, an expected long-term rise in the price of imported food; instability in the price of imported food; and the risk that imports of food might suddenly become very expensive or unavailable.

Foresight in food supplies

Chapter 3 begins by elaborating the concept of an expected long-term rise in the price of imported food and then explains the argument, familiar to economists, that the optimum size of domestic agriculture will be affected by the relationship between domestic production costs, at the margin, and the cost of food imports. A rise in the (real) price of imported food implies a rise in the optimum size of the domestic sector, but such expansion would be induced automatically if rising import prices were allowed to be translated into domestic farm product prices. However, where questions of land use are involved, expectation of a long-term rise in world food prices implies a current decision, since land cannot easily be returned to farming once diverted to most other uses. It is argued that, because private decisions on land use are likely to discount future benefits too greatly from a national point of view, an expectation of rising world food prices does imply some government restriction on the transfer of agricultural land to urban use. How significant this factor would be, relative to other aspects of the social consequence of alternative uses of the nation's land, cannot be ascertained without further study. This would involve assumptions about future productivity of land in various uses, appropriate social discount rates, as well as a view of future world food prices.

Two further points should be made in connection with the implications of an expected long-term rise in the price of imported food. First, the problem associated with this kind of change in the price of food imports has nothing to do with self-sufficiency; it is concerned with the appropriate size of UK agriculture, irrespective of whether extra output displaces imports or finds an export market. Second, the argument itself is not affected by membership of the European Community; if a policy response to an expected rise in UK food import prices is implied when

this rise in import prices is associated with a rise in world food prices, then it will also be implied by a rise in food import prices associated with policy developments in the European Community.

Stability in food supplies

Much of Chapter 4 is devoted to a discussion of two potential problems associated with imported food price instability; the impact on consumers and the possibility that fluctuating food prices will make more difficult the task of managing the economy. In both cases the balance of evidence suggests that stable prices will yield a benefit compared with unstable ones. However, an increase in agricultural self-sufficiency does not, in itself, eliminate imported price instability, though it may affect the feasibility of operating a policy which does. To prevent instability on world food markets affecting domestic markets, a policy has to be adopted which holds imported quantities constant in the face of fluctuating international prices. The most straightforward way of doing this is to tax imports in periods of low world prices and subsidise them in high price periods. A change in the degree of agricultural self-sufficiency is relevant to this kind of policy in that, the nearer the country is to self-sufficiency in food supplies, the smaller will be the fluctuations in expenditure and revenue associated with the policy.

The Common Agricultural Policy is a classic example of a trade tax/subsidy stabilising policy with, however, domestic target prices set so high that virtually all the stabilising is done by variable taxes on imports for deficit products and variable subsidies on exports for surplus products. On the other hand, membership of the European Community places severe restrictions on the ability of a member state to stabilise national markets by controlling imports from other member states. An example of the latter is the reduction in the degree of control over potato prices in the UK likely to result from the removal of the UK ban on imports of maincrop potatoes. Thus, the question of imported food price instability in the UK needs to be viewed both in terms of the way the Common Agricultural Policy stabilises food prices within the European Community as a whole and the constraints it places on national stabilising policies.

For the UK, the Common Agricultural Policy possesses one serious disadvantage as a price stabilising system; stability is bought at the cost of paying more, on average, for food imports. Most agricultural policies combine price stability with price support; that is, in order to meet the objectives of agricultural policy, governments have found it necessary not only to stabilise prices, but to ensure that producers receive, on average, higher prices than would apply if there were no controls on agricultural trade. A net food importing country using the trade tax/subsidy system to stabilise and to raise domestic prices would find itself taxing imports more often than subsidising them and there would thus be a net benefit

to the exchequer. A net food importing country which is a member of a Community which jointly applies this system finds, in contrast, that prices in foreign exchange are stabilised and that, as a consequence, the nation pays more for its imports of food.

Looking at the stabilising properties of the Common Agricultural Policy from the point of view of the European Community as a whole, the trade tax/subsidy system possesses the problem that although it stabilises domestic markets, it exaggerates world price instability. This is important because instability can originate in fluctuating domestic production as well as be imported. The Common Agricultural Policy avoids food price instability originating in domestic production by varying import or export quantities to counteract fluctuations in domestic supplies, but the European Community, in effect, refuses to help counteract output fluctuations in other countries. If a number of major trading blocks were to adopt such policies, the world food market would become increasingly unstable, the world trading system would begin to break down, and the stabilising force of world trade would be lost.

The policy message is that the UK should be prepared to accept some imported food price instability as a reasonable price to pay for the benefits of being able to use the world trading system to counteract fluctuations in European output. The UK should therefore encourage other members of the Community to seek international liberalisation of trade in food products as the best solution to the problem of food price instability.

Security in food supplies

The main implication of the argument in Chapter 5 is that there is a strong case for the UK to aim for a degree of agricultural self-sufficiency consistent with the ability to meet the minimum nutritional requirements of the nation from domestic sources in times of emergency. However, once this level has been reached the case for increasing agricultural self-sufficiency to increase the security of food supplies becomes much weaker. The benefit is now the convenience of being able to avoid abrupt adjustments in patterns of consumption following a sudden change in world market conditions, and it is argued in Chapter 5 that there are probably other, less costly policies which can achieve this objective. As with stability, an important consideration is the function of the world trading system, in this case to provide security against failure of domestic production. It is argued that whereas a level of self-sufficiency consistent with meeting minimum food requirements in an emergency would contribute to world food security, higher levels of self-sufficiency (not justified on other grounds) would not do so.

Membership of the European Community strengthens these conclusions. Political and economic union in the Community have not advanced enough to allow

confidence about preferential UK access to European food supplies if the world economic environment were to deteriorate to such an extent that the UK could not purchase enough food at prevailing world prices to keep the population alive. On the other hand, one might expect the Common Agricultural Policy to enable the UK to obtain a significant proportion of its imported food requirements at below world prices in less severe periods of world food shortage (such as those experienced during 1974–1975).

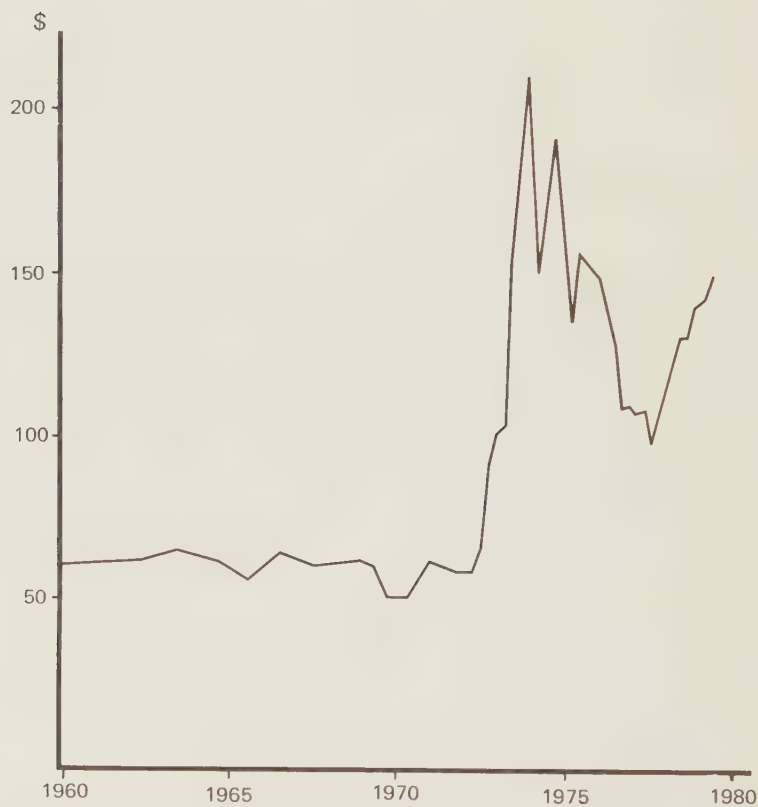
One general conclusion of this study is therefore that self-sufficiency in food supplies is directly relevant only to the problem of achieving security in food supplies and then only when security is interpreted as the ability to meet the minimum food requirements of the nation in time of emergency. But it would be a mistake to believe that food supply security is achieved simply by increasing UK self-sufficiency in food supplies to some appropriate target figure. The existing degree of self-sufficiency is relevant to food security because of its effect on the ability to *become* self-sufficient in an emergency. Of course, the higher the normal output of the sector, the easier it would be to achieve some given level of farm output. But in a world environment in which the country would need to feed itself, the supply of some farm inputs would probably be as scarce as the supply of food products. There is little point in boosting domestic agriculture to increase existing self-sufficiency if expansion is based on the most efficient production methods relative to the existing balance of input prices. The implication is perhaps that the government should encourage the kind of production systems likely to be required in an emergency, rather than encourage expansion on the basis of existing technology and input mixes.

1 Post-war agricultural policy in the UK and the national interest

Direct state marketing and rationing of food in the UK ended in 1954 and these events coincided with the beginning of what seems, in retrospect, to have been a period of remarkable stability on world food markets. It was to be nearly 20 years before UK agriculture experienced a change in government policy in any way comparable to the dismantling of state controls and the return to the 'free' market of the early 1950s. This second policy change in the early 1970s was the first transitional step towards adoption of the Common Agricultural Policy (CAP) of the European Community (EC) on 1 February 1973; curiously, only about a month previously, a steep rise in world wheat prices (see Figure 1.1) had signalled the end of the stable period for world food markets and the onset of the short episode now usually referred to as the 'world food crisis'.

During this 20-year period there seemed little reason to question the prevailing assumption in the UK – that plentiful supplies of food would be available from world markets at reasonably stable prices. The 1947 Agriculture Act (Parliament, 1947) which provided the framework for post-war agricultural policy, had specified that one objective of agricultural policy should be '... producing such part of the nation's food and other agricultural produce as in the national interest it is desirable to produce in the United Kingdom'. The inclusion of this phrase no doubt reflected the experience of two world wars and the belief that the government should be involved in ensuring food supplies. However, once the immediate post-war food shortage had ended, concern over the price or availability of imported food was never a major factor influencing government policy towards domestic agriculture. The existence of the Commonwealth seemed to imply that Britain's role in the world would continue to involve substantial food imports from Commonwealth countries and the basic criterion for deciding what proportion of the nation's food supply should be domestically

Figure 1.1
Export price of wheat¹ (US \$ per tonne)



1 No 2 hard winter wheat (ordinary); US export price, fob Gulf.
Based on annual figures to 1969; quarterly averages from 1969 onwards.
Source: international Wheat Council (various years)

produced was the efficiency of British farming relative to import prices. In some cases, such as the arrangements under the Commonwealth Sugar Agreement, government policy may even have favoured the imported product (Sturrock, 1969).

Nevertheless, government treatment of agriculture was reasonably generous. In contrast to the situation in many other developed countries, incomes in British farming have been, on average, roughly comparable to incomes in other occupations. Guaranteed prices were set for most farm products and when average market prices were less than the guarantee (as was usually the case) farmers received deficiency payments to bridge the gap. The level of deficiency payments varied considerably between products but guaranteed prices were, typically, about 10–15% above import prices. Farming also benefited from a variety of investment grants and input subsidies and — for some products — from the monopoly selling powers granted to producer marketing boards. A crude calculation suggests that the level of annual farm output was about 10% higher than it would have been if government support for domestic farming had been reduced to the minimum consistent with overall government objectives towards incomes and employment in the country as a whole.

PRODUCTIVITY

Government support for agriculture was often justified as being ‘in the national interest’ as well as being consistent with a desire to maintain farm prosperity. This was argued on two main grounds. First, it was contended that the assurances given to farmers by guaranteed prices and the payment of production grants encouraged improvements in agricultural productivity. It is difficult, and sometimes impossible, to attribute the cause of a productivity improvement and productivity itself is something of an elusive concept (Beynon & Houston, 1973). In an article in *Economic Trends* (MAFF, 1969) it was estimated that output per unit of all inputs valued at constant prices grew at about 1.8% per year over the period 1954 to 1968. The growth in farm labour productivity in the UK compares reasonably well with that in many other countries (Johnson, 1973) and particularly well with labour productivity in other UK industries (Select Committee on Agriculture, 1967). Nevertheless, a recent study by Marsh (1977) throws considerable doubt on what might be called the ‘orthodox view’ held in British farming circles — that British farming is the most efficient in Europe.

A country can capture the benefit of productivity improvement in an industry by an increase in the output of that industry or by releasing resources to other sectors. Historically, most of the benefits from productivity

improvements in farming have been expressed by the release of labour to the rest of the economy. However, in the case of UK agriculture in the post-war period, increased output seems to have been the predominant result; outflow of labour has been associated with increased capital inputs and net product of the sector (at constant prices) rose continually by about 2% per year. The Ministry of Agriculture, Fisheries and Food (MAFF, 1969) estimated that about two-thirds of the growth in output could be attributed to productivity improvements. The contribution of UK agriculture to total indigenous-type food supplies rose from about 64% in 1955 to about 68% in 1974 (Baines & Angel, 1969; MAFF, 1977a). So, if government expenditure on agriculture has contributed significantly to the growth in farm productivity, it can be argued that this has been money well spent compared with some other uses of public funds.

IMPORT SAVING

The second of the national interest justifications for support of domestic agriculture was the view that agricultural expansion contributed to the solution of the nation's balance of payments problem. The extent to which an increase in the output of British agriculture would aid the balance of payments was the subject of a continuing debate (see for example Phillips & Ritson, 1970; Winegarten & Josling, 1970). Successive governments recognised the import saving role of British agriculture but never attempted to justify agricultural expansion on these grounds alone. Import replacement was seen as one of the benefits of productivity growth in domestic farming but not as a reason for stimulating domestic production at a resource cost greatly in excess of import prices.

This approach to the UK balance of payments problem is underlined by the 1975/76 deficit, which was a more straightforward matter than previous bouts of external imbalance. A sharp rise in the price of imported oil and of most other primary commodities, left the country with a straight choice in the short-term between consuming less (so that a greater amount of British output could be exported to pay for more expensive imports, or so that fewer goods needed to be imported) or borrowing from abroad and maintaining existing living standards. At first, the country chose to borrow and found itself with the largest balance of payments deficit in its history. This deficit could only be eliminated by a cut in consumption or an increase in production (including, crucially, production of North Sea oil).

The policy implication for domestic agriculture is that an expansion due to productivity improvement or the use of previously unemployed resources will probably aid the balance of payments, whereas expansion brought about by

attracting resources into farming from other sectors probably will not. Similar comments can, however, be made about any sector of British industry – the fact that the output of farming (or, for that matter, of North Sea oil) competes directly with imported produce is largely irrelevant from a balance of payments point of view. An increase in farm output, if it means producing less of some other goods, would probably result simply in increased imports of non-agricultural products.

IMPORT PRICES

In short, post-war agricultural policy in the UK may be regarded as successful in that British farming has, in general, enjoyed quite prosperous conditions. Although during the early 1950s British agriculture was believed by some observers to have been more heavily protected than that of most other developed countries (McCrone, 1962), more recent studies (FAO, 1973) show the degree of protection given to UK agriculture to be relatively modest compared with many other countries. The claim that agricultural support has encouraged productivity improvements may have some justification; the view that support could be justified on balance of payments grounds is probably not as valid, except in so far as the benefit has been obtained via productivity improvement.

Prior to EC membership, concern over the price of imported food can be said to have influenced agricultural policy only during the mid-1960s when the UK government negotiated agreements with suppliers of bacon and dairy products to keep the price of imports offered to the UK *above* a minimum level (Select Committee on Agriculture, 1967). The problem of increasing cost of imported food first received attention in the late 1960s when it became apparent that Britain's application to join the EC might be successful. It was widely accepted at that time that adoption of the CAP would represent a considerable burden upon the UK economy (Marsh & Ritson, 1971). The desire to provide an acceptable standard of living for Europe's millions of small farmers had led EC policy makers to set common farm product prices well above those applying in Britain. Furthermore, the Community had chosen a support system which pushed up consumer prices. Joining the EC seemed, therefore, to mean not just a cost to the UK in having to pay more for imported agricultural produce, but a burden on UK consumers who would have to pay more for their food, including that produced by their own farmers.

It was recognised that one way in which this burden could be eased was by an expansion of domestic agricultural output; ie, the much higher prices expected to apply to food imports under the CAP would make an expansion of output by British agriculture worthwhile, whereas previously such an increase in output

would have been at a resource cost exceeding the cost of imports replaced. However, this situation did not seem to require any policy response by the UK government; the higher prices applicable to UK farming under the CAP would themselves stimulate the required expansion of output.

Of more fundamental significance to the debate surrounding the formulation of agricultural policy in the UK was the steep rise in world food prices which began in 1972 (see Figure 1.2); it was late 1975 before prices (in real terms) declined significantly, though by 1978 some commodity prices were lower, in real terms, than they had been prior to the commodities boom.

Any rise in the prices of products a country normally imports, relative to the prices of the products it exports, constitutes a cost to that nation. The country's terms of trade are said to have moved against it, i.e. the prices of the things it sells have moved adversely relative to the prices of the things it buys. A given volume of exports buys less imports; the country must consume less than would otherwise have been possible.

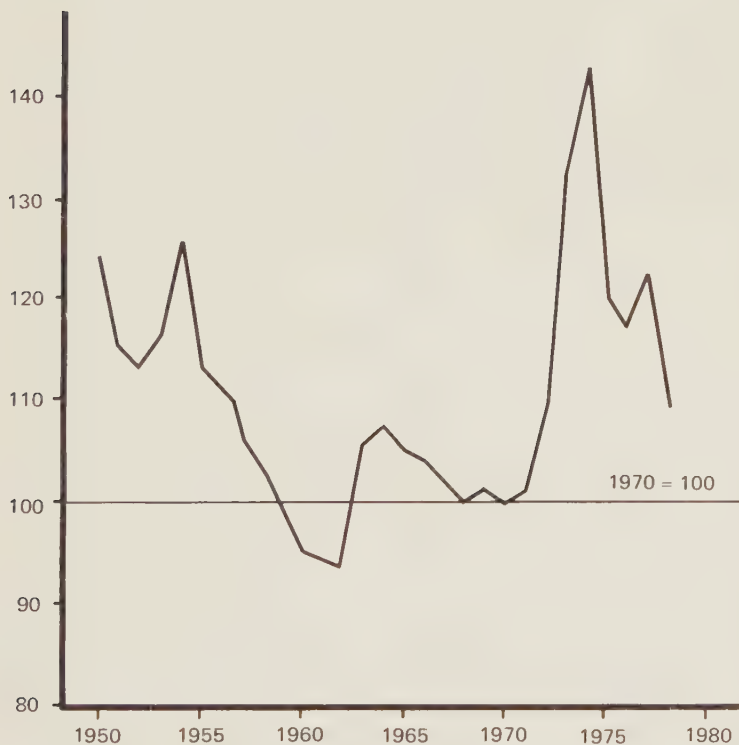
A rough indication of the extent of this cost is given by the rise in the UK food import bill, relative to national income, during the 1970s (see Figure 1.3). The gradual decline in the value of UK food imports (expressed as a percentage of national income) from just over 5% in 1965 to about 4.3% in 1972 was the result of two factors. First was the increase in UK agricultural self-sufficiency already referred to. Second, and more significant, the value of food consumption as a proportion of national income was itself decreasing. Total expenditure on food products in the UK increases by only about 0.2% for every 1% increase in real income (MAFF, 1977 b). Thus as national income rises so the value of food purchases falls as a proportion of national income. With the steep rise in world food prices between 1972 and 1974 the value of UK food imports (as a proportion of national income) regained its 1965 level; it then recommenced its decline.

Despite the UK being a member of the EC, the adoption of the CAP was not responsible for raising the cost of food imports between 1972 and 1974; indeed it has been shown that, on balance, during 1973 and 1974, UK food imports were marginally cheaper than would have been the case had the UK not joined the Community (Federal Trust for Education and Research, 1975). It was not until 1976 that the CAP could be held responsible for a significant impact on food import costs; calculations by Harris & Josling (1977) suggest that UK food industry expenditure on nine major food commodities in 1976 was about 11% higher than if the CAP had been '... a more liberal trading entity allowing the UK freer access to alternative supplies, where cheaper'. A more recent study published in the *Cambridge Economic Review* (Godley et al, 1978) estimates that food prices to the consumer were, on average, about 12% higher in 1978

Figure 1.2

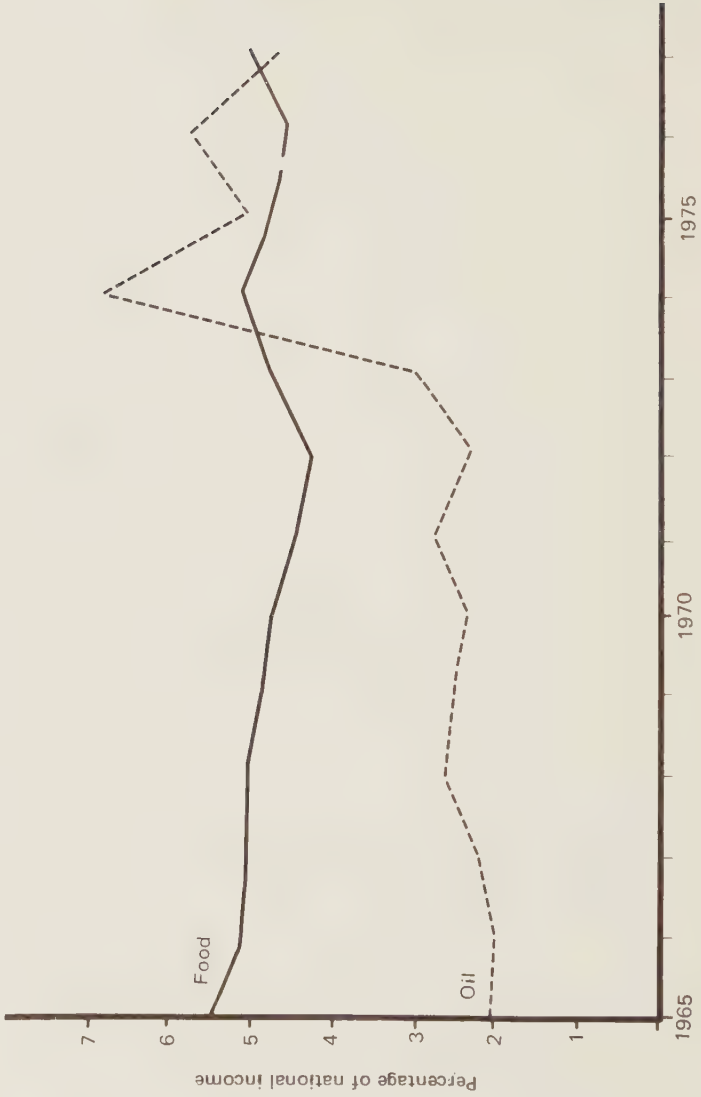
World terms of trade between food and manufactured products
(Index of unit values of food product exports

Index of unit values of manufactured product exports)



Source: Based on United Nations statistics

Figure 1.3
Imports of food and oil as a percentage of UK national income



Source: Central Statistical Office (various years)

than if Britain had not adopted the CAP – roughly the same as predicted in the White Paper published in July 1971 (Cabinet Office, 1971). Similarly, the 1978 balance of payments cost of UK membership, which is mainly attributable to the CAP, is estimated to be, in real terms, only a little higher than predicted in the 1971 White Paper.

To be forced to devote an extra 1% of national income in a particular year to pay for food imports is certainly not an insignificant matter as far as a country's living standards are concerned. But the extent of the adverse impact of the world food price explosion on the UK economy is put into perspective by comparing it with the corresponding impact of the rise in oil prices. Figure 1.3 also shows that the value of oil imports as a proportion of UK national income rose from less than 3% in 1973 to nearly 7% in 1974. Looking at the question in this way suggests that the rise in world food prices should perhaps be viewed as exacerbating the problems caused by the rise in the price of oil and other raw materials, rather than as a major problem in itself. Nevertheless, many experts did take the 'world food crisis' as a firm indication of a potential longer-term problem facing the UK.

FOOD FROM OUR OWN RESOURCES

The government's response to these events was the publication of the White Paper *Food from our own resources* (MAFF, 1975) which advocated an increase in the net product of the industry by, on average, about 2% per year between 1975 and 1980. It suggested that '...most benefit is likely to come from higher output of milk (with its by-product, the beef from the dairy herd) and sugar beet. Cereals and sheepmeat should also make a significant contribution.'

The content of this White Paper has been largely misinterpreted. It is more a projection (at first, very inaccurate, as it turned out) than a policy document. The net product of the industry had been increasing by over 2% per year for ten years. The underlying assumption (which could not be made explicit, as the White Paper was published prior to the referendum) was that Britain would have fully adopted the CAP by 1978 and that the generally higher level of farm product prices would both justify and stimulate the projected expansion of output and that the balance of CAP prices would determine the appropriate balance of expansion. Thus sugar and dairy products were favoured; both are products for which CAP prices are seriously out of line with world values.

The fact that the projected expansion and output did not at first occur (output fell by 19% between 1974/75 and 1976/77 but recovered in 1977) has been attributed to two main causes. First, generally adverse weather conditions in 1975,

followed by the drought in 1976, had a severe impact in several commodity sectors. Second, because of Europe's Green Money System the UK government unexpectedly found itself able to restrain the increase in farm product price-increases which had previously been regarded as an inevitable consequence of adopting the CAP. However, it is probably the weather that was mainly responsible for the initial inaccuracy of the *Food from our own resources* projections. A previous paper from the Centre for Agricultural Strategy (Swinbank, 1978) shows that support prices in the UK have not been seriously out of line with those expected at the time of accession, the gap between prices in the UK and in other EC member states being more a function of the latter rising more rapidly than envisaged.

The green pound may however have important long-term implications for the development of UK agriculture. With a purely national agricultural policy, a government can manipulate prices paid to its farmers independent of the price of imports; with changes in the green pound the prices received by British farmers can only be raised by a measure which simultaneously increases the foreign exchange cost of imports. This is a severe restriction which could result in the sacrifice of what would otherwise be regarded as a desirable expansion of domestic agriculture, in return for the (very real) advantages of keeping down the price of food imports (Ritson, 1978).

FARMING AND THE NATION

The decline in output in 1975 and 1976, together with concern over the government's green pound policy, led to pressure from the farming community for a restatement of the policy aims outlined in *Food from our own resources*. This statement appeared in February 1979 as a second White Paper *Farming and the nation*. (MAFF, 1979); in it the government avoided specific commodity projections but nevertheless underlined the generally expansionary philosophy of the earlier White Paper. With a considerable decrease in world food prices (in real terms) since 1975, less emphasis was given to world market conditions: 'World prices for the major temperate food-stuffs seem unlikely to rise sharply in the near future but the position in the longer term with the expected continuing increase in world population and with much of the existing world population lacking an adequate food supply, is uncertain'. It was stressed that membership of the EC, and particularly the rate of exchange at which common Community prices are translated into sterling, was now the predominant medium-term influence on UK food input costs: 'Overall, the Government's conclusion is that import prospects and the need for insurance continue to point to the desirability of increased agricultural output in this country'.

AGRICULTURAL SELF-SUFFICIENCY

Of perhaps more lasting influence than the government's reaction to the world food price explosion has been the spontaneous growth in several sections of British society of a feeling that a different, much longer-term, approach to agricultural policy questions was needed in the UK. In particular there was a view that a substantial increase in UK agricultural self-sufficiency would be in the national interest.

The Centre for Agricultural Strategy is in one sense a product of this concern over the contemporary direction of UK agricultural policy. When the Centre was launched, it was stated that priority would be given to examining the meaning and implications of a higher level of agricultural self-sufficiency in Britain: during 1976, the Centre consulted a wide range of individuals to obtain their views on the topic. As one would expect, no consensus emerged. It might nevertheless be useful to conclude this chapter by summarising some of the main themes which have been apparent in discussions surrounding this issue.

At the risk of severe over-simplification, it can be said that during the 1960s there were two approaches to the question of UK agricultural self-sufficiency. The approach of one group can be best described as emanating from the view that 'it is foolish to import produce which we can grow in our own country'. This view was associated with a fundamental belief that imports were to be avoided if at all possible and that, in the context of the periodic UK balance of payments problem, an increase in agricultural output was desirable because it 'benefited the balance of payments'. This group was the most frequent user of the term 'self-sufficiency' since the logical outcome of their belief was that self-sufficiency in a commodity was a reasonable policy target and that the degree of self-sufficiency was, in a sense, a measure of national performance in a sector.

The second group, dominated by economists — or at least by economic ideas — saw little significance in self-sufficiency as such and rarely used the term. Indeed many regarded it as a dangerous term, since what they regarded as a useful measure of a country's trading position tended to be translated into a policy target by government — in some European countries, if not in the UK. The reasons why the government might be justified in introducing policies which altered the balance of domestic production and consumption were studied, but only occasionally was self-sufficiency in a commodity regarded as of any significance — an example being the different policy problems associated with support of farm product prices when a country moves into export surplus in a commodity.

Many economists were in favour of support for domestic agriculture on balance of payments grounds, but did not regard any particular level of agricultural self-sufficiency as relevant in this context; the important question was seen as the marginal cost of domestic agricultural expansion relative to world trading

prices, irrespective of the degree of self-sufficiency in any commodity sector or in aggregate. The ideas of the first group were frequently aired by many individuals associated with the agricultural industry; those involved professionally in agricultural policy (for example in government departments and in the universities) tended to belong to the second group.

The 'world food crisis' has made the concept of self-sufficiency respectable as far as the professionals are concerned, for it was readily recognised that *if* importing agricultural products does pose any threats to the nation's food supply then the degree of agricultural self-sufficiency clearly becomes a relevant issue. In the early post-war period the discussion on security of food supplies had tended to concentrate on the threat during periods of hostility; the country had, of course, recent experience of such problems and their implications for the nation. This time, however, the problem was seen more in terms of constraints on, and fluctuations in, food production throughout the world. What this means for the food importing country is rather more complex.

The purpose of this paper is to explore the implications for a food importing country (such as the UK) of concern over the future price or availability of food supplies, to consider the possible policy options that might be taken to alleviate such concern, and to indicate the costs involved.

2 Self-sufficiency and food supply policy

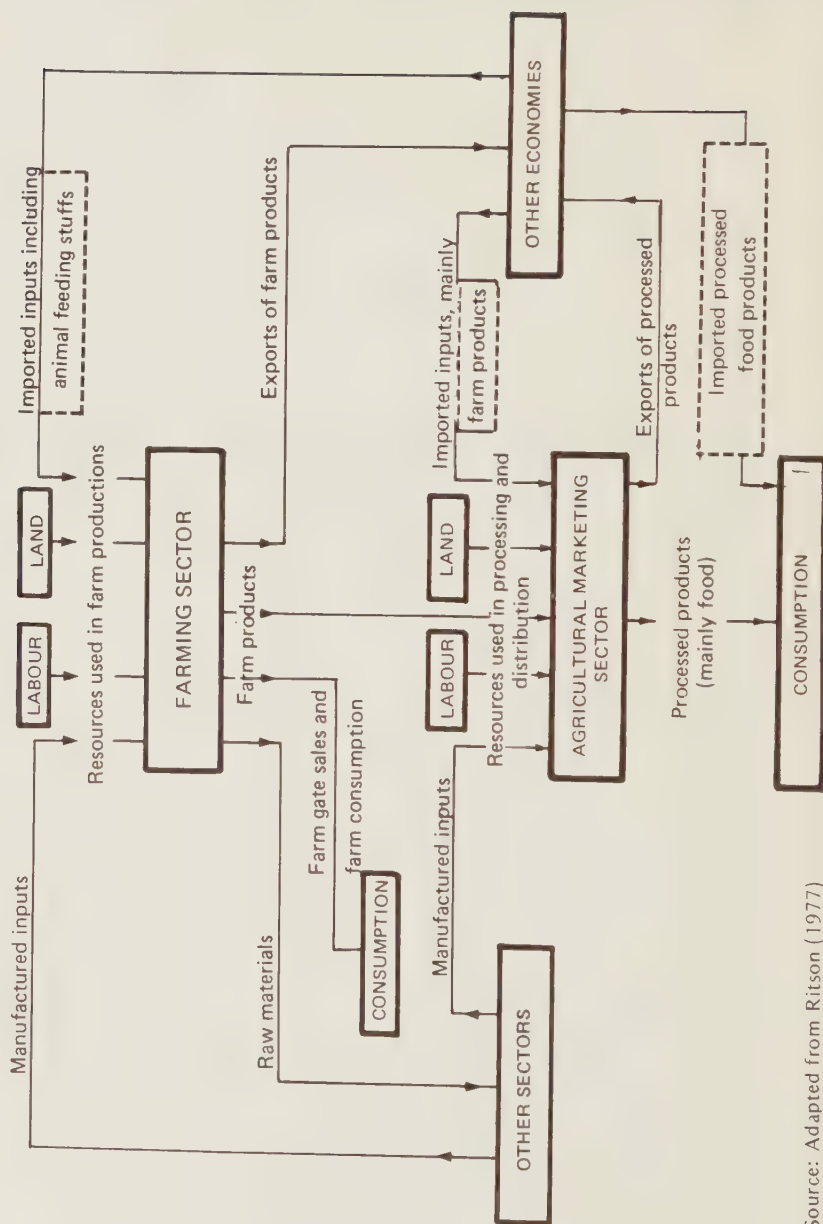
The previous chapter explored in a general way the evolution of post-war agricultural policy in the UK with emphasis on the way the stated aim of 'producing such part of the nation's food and other agricultural produce as in the national interest it is desirable to produce in the United Kingdom' seemed to have been interpreted. The purpose of this chapter is to identify more clearly the particular policy issues to which the present study is directed.

The agricultural policies developed in advanced countries since the Second World War are directed towards a large number of often conflicting objectives, and they encompass a wide variety of policy instruments. The complexity of these policies makes it imperative that individual detailed policy studies concentrate on specific issues and that these should be clearly identified. Broadly speaking, the boundaries of a national agricultural policy study will normally be delineated by focusing attention on either a particular part of a country's agricultural and food production system, or on some aspect of individual or national welfare which is thought to be influenced by agricultural policies. Sometimes both criteria will be involved. Occasionally, a specific policy instrument provides the terms of reference, as for example, in Swinbank (1978).

Figure 2.1, a representation of the agricultural and food production system of an economy, illustrates the first of these criteria. We might reasonably define any attempt by government to influence the operation of some part of this system as an agricultural or food policy. This would be consistent with Josling's definition of agricultural policy as 'that set of measures taken by central governments which are aimed at influencing, directly or indirectly, agricultural factor and product markets' (Josling, 1974).

Within this broad subject, certain policy areas can be characterised simply by taking a sub-part of the agricultural and food production system. For

Figure 2.1
The agricultural and food production system of an economy



Source: Adapted from Ritson (1977)

example, it would seem reasonable in most cases to take 'food policy' as describing policies which originate in a desire to influence the part of the system involving the consumption of food and, similarly, 'farm policy' as originating in concern over events within the farm sector. There are also accepted 'branches' of agricultural policy which involve, on the one hand, individual factor inputs and, on the other, the marketing sector.

The self-sufficiency issue, however, seems to cut across such distinctions. It encompasses problems which originate on one side of the farm gate and objectives which lie on the other. The concern over agricultural self-sufficiency is perhaps best interpreted as part of a subject area which may conveniently be described as food supply policy: that is, government actions directed towards influencing the source, the composition and the cost of the nation's food supply in order to meet certain national objectives primarily associated with the consumption of food. The present study concentrates on one aspect of food supply policy, namely government policies which seek to influence the proportion of final consumption of food derived from imported products. This involves (in terms of Figure 2.1) imports of processed food products, imported animal food-stuffs and imported inputs for the food manufacturing sector which originate from farming sectors of other economies. Certain other imported key inputs to the farming sector (such as fertiliser) may also be important but emphasis here will be on the former categories which will be referred to simply as 'food imports'.

The second criterion for the identification of an 'agricultural policy issue' is more elusive and involves more contentious matters. It may be postulated that, ultimately, government policies are (or at least should be) directed towards maximising the 'aggregate happiness' of the nation's population. We may conveniently use the term social welfare to describe aggregate happiness. There are of course enormous problems in comprehending what would be maximum social welfare, even if a government were capable of identifying and carrying out the policies necessary to bring it about. Three main problems come to mind:

- (i) To what extent can the goods to which an individual chooses to devote extra income, or the way he chooses to spend extra leisure time, be regarded as the best evidence of what constitutes greater happiness?
- (ii) How can the welfare of different individuals be compared? Policy decisions often involve improving the position of some individuals at the expense of others;
- (iii) How can one deal with the welfare of future generations? There may be a trade-off between the welfare of existing and future generations.

These matters are complex, but the choice of an optimum policy necessarily involves decisions on these kinds of questions (though the decisions may be implicit).

There seem to be four main ways in which social welfare in this sense can be influenced by government measures directed towards agricultural production and food supply. People may be affected:

- (a) As earners of income (or profit) in agriculture;
- (b) As visitors to (or inhabitants of) the countryside;
- (c) As consumers of food;
- (d) As consumers of all products (ie, by variations in real incomes).

It is clear that a government policy directed towards any of these is likely to have some implications for food imports. Yet those people in the UK who have been provoked by the 'world food crisis' into advocating increased agricultural self-sufficiency seem to be most concerned with aspects of category (c) and to some extent with category (d).

The crucial distinction is whether the impact on self-sufficiency is merely a by-product of an agricultural policy or whether there is something in the very nature of the imported product which has implications for national welfare. There has, for example, been a substantial increase in agricultural self-sufficiency in the countries subject to the CAP and part of this can be attributed to the stimulus of relatively high levels of farm product price support. It is generally accepted that the principal reason why the Council of Ministers chose such high farm product prices was the desire to protect the living standards of Europe's small farmers. Although there has been implicit within the CAP an objective of increasing agricultural self-sufficiency, it has not always been made very clear why this should be regarded as a desirable goal (Parris & Ritson, 1978) and there is little doubt that European farm output would not have expanded so rapidly without the pressure for high prices to support farm incomes.

Similarly, one can see many ways in which government policies towards protecting the rural environment might result in either more or less food imports, but this effect would be incidental. Clearly, also, many policies which fall within categories (c) or (d) would affect the level of food imports.

To identify how the degree of agricultural self-sufficiency directly affects national welfare a better understanding of categories (c) and (d) is needed. One might hypothesise that, as consumers of food, people are better off: the lower the average level of food prices; the more continuously produce is available in the shops; the wider the selection of available produce and the less likely consumers believe to be the possibility of food suddenly becoming unavailable or very expensive; the more healthy and nutritious their diets.

It is more difficult to categorise the elements that make up (d), which is concerned with how events in agricultural production and food supply, and government policies directed towards these sectors, may have implications for the performance of the economy and thus affect the average level of real income in

the country. This will involve the general efficient use of the nation's resources from both a static and dynamic (growth) point of view: the need to maintain external balance (ie balance of payments questions); reciprocal events in other countries (ie, trade policy questions); the need to maintain a stable currency (ie the problem of inflation).

Government policy directed towards any of these questions might have many implications for the level of food imports, yet self-sufficiency may not be directly relevant to the objective involved. For example, a government is not likely to regard taking steps to alter the source of the nation's food supply as a sensible starting point of a policy designed to alter dietary patterns, though it might, conversely, attempt to alter patterns of food consumption if it regarded the consequent change in supply sources as in the national interest.

This leaves the question — is it possible to identify some characteristic of imported food, as opposed to domestically produced food, which may have implications for some component of (c) or (d) and which may lead a government to wish to influence, specifically, the degree of agricultural self-sufficiency? The remainder of the study is based on the view that if there is such a characteristic, then it is price. How much does the consumer have to pay for the imported compared to the domestic product; how much does the nation have to pay in terms of value of produce exported; how are import prices likely to evolve relative to domestic production costs?

In addition to problems over the price of food imports, a country might find that imports were simply unavailable. However, although the causes might differ, the consequences for the country are the same whether food imports are unavailable or too expensive to buy.

Further, arguments in support of increased agricultural self-sufficiency can be categorised according to what kind of price problem is thought to be involved. First, a distinction can be made between arguments involving the current cost of food imports and those involving future prices. The question of current food import costs has received a good deal of attention in the UK in the post-war period, with research concentrated on two related issues: the contribution of UK agricultural expansion to the balance of payments and the efficiency of UK agriculture relative to the cost of imported produce.

This study attempts to extend the analysis to cover the kind of issues of concern to those who have advocated increased UK agricultural self-sufficiency on account of the 'world food crisis'. The next three chapters examine three aspects of the future price of imported food which may have implications for national welfare, ie the expected future price of imported food; variability in the price of imported food; the risk that imported produce might suddenly and unexpectedly become very expensive or unavailable.

However, before discussing these issues, it is necessary to comment further on the term self-sufficiency and its use in public debate. As a measure, the concept of self-sufficiency is ambiguous. Three basic uncertainties are involved in the calculation of any self-sufficiency ratio (ie the extent to which total consumption is derived from domestic production). First, there is the question of what constitutes domestic production. Sometimes, a major part of the value of a farm product is derived from an imported input. For instance, it is conventional to calculate self-sufficiency ratios for vegetable oil and oilcake net of imported oilseed (Parris & Ritson, 1978) and sometimes for animal products net of imported feed. But what about imported fuel and fertiliser? Or, for that matter, the 'imported' research worker who develops the improved breed, or the 'imported' accounting system used by the farm machinery manufacturer? And what if the imported grain was produced with the help of an exported tractor? Such considerations lead those who view international trade as a natural and beneficial aspect of the world economy to be cautious when interpreting self-sufficiency ratios.

Second, there is the problem of finding some common denominator for aggregation, particularly when attempting to calculate an overall degree of agricultural self-sufficiency. Normally this would be done in terms of value, but it might not be straightforward to decide which prices to use, particularly when government policies have led to a gap between domestic market prices and world trading values. Self-sufficiency ratios can also be calculated in terms of nutritional properties, for example calorific value.

Third, there is uncertainty over whether one should be referring to self-sufficiency ratios actually obtained over some period, or potential ratios which would take account of feasible adjustments in production and consumption. In fact potential self-sufficiency is probably the more useful concept — that is, the extent to which domestic production could, if required, be adjusted to meet some domestic consumption target.

Throughout, the distinction between self-sufficiency as a useful measure, and self-sufficiency as a policy target is of paramount importance. Some given change in the price of imported food may suggest a particular policy response, irrespective of whether the initial self-sufficiency ratio is 50%, 100% or 150%. Indeed it is only in the context of the discussion in Chapter 5 that self-sufficiency as such, rather than the appropriate size of the domestic agricultural sector, appears to be the critical issue.

3 Foresight in food supplies

This chapter considers the reasons why a government might be justified in attempting to influence the degree of agricultural self-sufficiency in anticipation of an expected long-term rise in the price of imported food. This requires, first, some clarification of what is meant by 'expected' and by 'long-term'.

Nothing in the future can be known with certainty, and the future level of world food prices must rank among the more uncertain of future events. Nevertheless, it is helpful to distinguish between two kinds of policy action: first, the action that a government would be justified in taking in response to a predicted rise in the price of imported food if it were possible to be reasonably certain that such a price rise would occur, and second, the appropriate action (if any) to deal with uncertainty over the level of future prices. This chapter deals with the former. The word 'expected' refers to the average of all possible outcomes, weighted by the probability assigned to each outcome and we are here concerned with the appropriate policy response of a government which acts as if the expected value will be the actual future outcome.

It is usual in the literature concerning decision-making in the face of risk and uncertainty to use the word risk when the probability of each alternative future outcome occurring is known (and thus an expected value can be calculated) and the word uncertainty when it is not. In fact, the relative probabilities of alternative outcomes will rarely be known with certainty, and may be completely unknown — the distinction refers not so much to completely different situations as to differences in the degree of accuracy with which the relative probabilities of alternative future outcomes are known. The appropriate response of a government in the face of the risk that the actual outcome will not be the expected one, and in the face of uncertainty over the expected value itself (that is, uncertainty over the probabilities of different possible future outcomes)

is discussed in Chapter 5.

In principle the meaning of long-term is rather more straightforward. A long-term price change is one sustained for sufficient time to justify a change in the quantity of fixed capital devoted to producing the commodity; this means changes in the prices of food imports which are expected to be sustained for at least 5–10 years.

THE OPTIMUM LEVEL OF AGRICULTURAL OUTPUT

Before considering the implications of an expected rise in the price of imported food, another question must be answered 'What is the appropriate level of domestic agricultural output for any given level of import prices?' The issues raised by this question are complex, but the main argument may be summarised in a simplified form as follows:

(i) Mainly because the agricultural land area of a country is more or less fixed, for any given technical conditions in agriculture, agricultural expansion can be achieved only at increasing marginal cost. That is, if some given increment in output, x , can be achieved by the use of an extra quantity of farm inputs, y , then a further increment in output of x will require more than y extra inputs. Therefore the cost to the nation of producing extra quantities of agricultural produce, in the sense of the quantity of non-agricultural goods that could have been produced if resources had not been devoted to producing extra agricultural goods, rises with greater total production;

(ii) It follows that the optimum level of domestic agricultural output is reached when the extra output achieved by putting a given quantity of resources into agriculture is the same as could be obtained if these resources had been employed in another sector, and the resulting output exchanged for agricultural goods produced in other countries. Thus the optimum level of domestic agricultural output is a function of the technical conditions of production both in agriculture and in other sectors, and of the traded value of all goods.

This argument relates to the food importing country, but it could equally be stated that the optimum level of domestic agricultural output is achieved when the same quantities of non-agricultural goods can be obtained either by devoting a given additional quantity of domestic resources to their production, or by employing the same quantity of resources in agriculture and exchanging the resulting extra production of agricultural goods for non-agricultural goods produced in other countries. There is no reason why this optimum should be associated with agricultural self-sufficiency. On the contrary, variations in population density, and in technology in agricultural and non-agricultural

production, as well as climatic differences, suggest that for many countries the optimum will involve a substantial quantity of either agricultural imports or agricultural exports;

(iii) It also follows that, for any given conditions of production in agriculture and non-agriculture, and for given trading prices for non-agricultural goods, the optimum level of domestic agricultural output will be positively related to the price of imported produce;

(iv) Under certain specified — and admittedly very restricted — conditions, a policy of non-government intervention in agricultural and in other product and factor markets (ie free trade) will lead a country to a level of domestic agricultural output which is this optimum. Among the more important conditions for this to occur are: that individual farm businesses apply profit maximising production plans; that the prices of inputs used in agriculture correctly reflect the value of the resources in other uses; that all costs and benefits of agricultural production are reflected by market prices of inputs and products; that the prices at which the country trades are independent of the country's level of trade; that adjustments in the patterns of production and trade in response to changes in the underlying situation are smooth and relatively rapid;

(v) The frequent absence of some or all of these conditions is one of the principal reasons for the development of government agricultural policies. This chapter, however, is concerned with the question of whether there is, specifically, any aspect of an expected future long-term rise in the price of imported food which may mean that a policy of non-intervention by government would not result in the optimum size for domestic agriculture, even if all the other conditions were met.

A government policy of non-intervention which led to an optimum level of agricultural output for any given set of import prices would continue to do so in the face of changing import prices if decisions affecting the size of the agricultural sector could be implemented instantaneously. However, in some cases a relatively long time-lag is necessary before the resource structure of the agricultural sector can be adjusted; therefore, private decisions may not be optimal, from a national viewpoint, when import prices are expected to increase.

There are two main reasons for this. First, if a government pursues a policy of non-intervention, and allows world trading prices to be reflected in domestic market prices, there can be no disagreement between the government and domestic producers concerning the level of current import prices. However, in the case of expected future prices the expectations of private decision-makers may differ from those of the government.

Second, even where the view of individual decision-makers concerning the expected future price level corresponds to that of the government, and even if all the conditions necessary for individual decisions leading to an optimum level

of agricultural output for any given set of import prices are met, it is still possible that private decisions might not meet the public interest when decisions are related to future (expected) rather than current prices.

DIVERGING VIEWS AND FUTURE PRICES

If, as suggested earlier, the optimum level of agricultural output is positively related to import prices, then an incorrect forecast of future prices must mean the non-achievement of the optimum at some future date, and thus a cost relative to the outcome if a correct forecast had been made. In retrospect, either the government forecast, or the industry forecast (or both) may turn out to have been incorrect, but in practice the best decision that can be made relates to the best forecast that can be made, and from a policy point of view the government will presumably back the accuracy of its own forecast.

Much of the foregoing might equally well apply to discussion of the appropriate size of any productive sector, but a government view of future prices is likely to be discernible only where a government believes there is a danger of private decision makers incorrectly forecasting the future; in most cases a government will be content to allow domestic producers to respond to their own forecast of future prices. Why should agriculture be an exception?

The atomistic nature of farm production makes it possible to argue that a divergence between private and public forecasts is more likely in the case of agriculture. Many large businesses possess whole departments devoted to forecasting; the individual farmer relies on published information and, at least according to one school of thought, places too much emphasis on current and recent past prices in estimating future prices.

In these circumstances, two kinds of policy action are possible. The first is simply to publicise the government view and hope this will become the basis of private decisions. In Chapter 1 it was suggested that the White Paper *Food from our own resources* (MAFF, 1975) could be regarded merely as a projection but, in as much as it was a policy document, it is interesting to note that expansion of domestic agriculture was advocated mainly on the basis of the expected level of future import prices and that the objective of the paper might reasonably be interpreted as that of publicising the government's view of the future price environment:

'The Government take the view that a continuing expansion of food production in Britain will be in the national interest. It is mainly the cost in sterling terms of alternative supplies from abroad which determines whether expansion of home production is economically worthwhile and, if so, to what extent; and the expectation now is that the cost of imported food and feed

will be higher, relative to other prices, than over most of the past two decades. On this view, price trends will themselves provide an incentive for higher output; but the objective of Government policy will be to provide farmers with a prospect of stability in their returns at levels encouraging the greater home production which would give the country an insurance against periods of shortage and higher prices. The basic conclusion that a continuing increase in the output of our own agriculture over the next five years will be economically worthwhile is drawn from an assessment of the price and availability of imported food and feed and, in the view of the Government, would remain economically valid, whether or not the United Kingdom decided to stay within the European Community.'

The alternative, and more drastic, policy response would be for the government to anticipate its view of the expected future level of imported prices and apply measures to raise the price received by domestic producers above the current level of import prices. Such a policy would probably bring about the required change in producer investment plans, but would involve the costs associated with excessive current use of inputs such as fertiliser, feed and fuel.

It is, however, very doubtful whether measures of this latter kind could be justified in a country such as the UK where modern and efficient farmers are often sophisticated decision makers able to exploit the many modern communication channels available. Such measures seem more likely to be appropriate to a less developed economy where the agricultural sector is dominated by small peasant producers; for such producers, product prices may be virtually the only information received which is related to conditions in the wider context of world markets for agricultural commodities.

SOCIAL TIME-PREFERENCE

The second way in which private decisions relating to an expected future rise in the price of imported agricultural produce might not meet the national interest concerns the choice of the appropriate rate of discount over time. When investment decisions influence the flow of output many years into the future, the rate of discount used can have a profound effect upon which decisions are optimal. In this respect agriculture is peculiar as an industry because of the nature of agricultural land as an input. It is extremely difficult and costly to switch land between agriculture and urban use in response to variations in relative output values — we talk about 'losses' of agricultural land and the term accurately reflects the often largely irreversible nature of the adjustment. To a lesser extent, decisions concerning reclamation and conservation of land, training of labour and, in particular, allocation of national resources towards research and develop-

ment of new technology in agriculture will also be affected by the choice of discount rates – but in these cases the problem is not peculiar to agriculture. Thus, while much of the present argument is relevant to any long-term investment decision in agriculture, discussion here will concentrate on the problem as it affects decisions concerning alternative land use.

Private decisions concerning land use will be influenced by prevailing rates of interest on loanable funds. The private individual is aware that any sum of money can be accumulated at what is, usually, a known rate of interest. Faced with a choice which involves a comparison of the receipt of sums of money in different time periods, a rational decision will involve discounting the later payment at the rate of interest applicable to himself.

In the case of a decision over alternative uses of land, the rate of discount used may affect what appears to be the optimum use when the time pattern and levels of future returns in the alternative uses are expected to vary between one use and another. This point can be illustrated by an example. Suppose that the expected net return from the employment of a unit of land in non-agricultural activity is £100 per year and, on the basis of current prices, in agriculture it is £50 per year. However, it is expected that over time, the price of imported agricultural produce will rise relative to the prices of other products, and to simplify the example, it is assumed this means that the expected return to the land in agriculture will rise from £50 to £150 per year after ten years. Table 3.1 gives the present value of these expected future flows of net revenue at alternative rates of discount. In the example quoted, the application of a rate of discount of 5% rather than one of 10% is sufficient to convert a clear margin in favour of the allocation of the land to non-agricultural use into a correspondingly clear margin in favour of its retention in agriculture. At a rate of discount of a little over 7% the revenue streams have the same present value.

This example indicates two conditions under which long-term issues should affect current national agricultural policy. First, in addition to any conviction that the relative price of imported agricultural produce is likely to rise, it must be possible to argue that the kind of trend in world food prices which is expected will have a sufficient impact upon the net revenue stream from land in agriculture to imply, in time, a significant difference in the optimum allocation of the nation's stock of agricultural land between agriculture and other uses. Second, there must be grounds for believing that the appropriate rate of discount applicable to decisions over land use, when viewed from the point of view of the national interest, is significantly lower than typical prevailing rates of interest on loanable funds.

On the former question, it should first be pointed out that a given proportionate rise in agricultural produce prices, in real terms, would be

expected to result in a much larger proportionate rise in the net revenue earned by land in agriculture. Second, in the UK, existing government restrictions on the transfer of land from agriculture may give a misleading impression of the degree of changed circumstances necessary to influence significantly the optimum pattern of land use.

Table 3.1

Present value¹ of two alternative revenue flows at different rates of discount

Rate of interest (%)	£100 per year in perpetuity (£)	£50 per year for 10 years £150 per year thereafter (£)
5	2000	2227
7	1429	1440
8	1250	1204
10	1000	885

1 The present value of £x in n years is the sum of money which, if invested now, will accumulate to £x in n years.

When the government imposes restrictions on the amount of land that can be transferred from agriculture, an enormous gap appears between the value of land at the margin in agricultural and non-agricultural use. Virtually any unit of land in agriculture, whatever its quality, is enhanced in value if transferred from agriculture. But this is not a gap which must be bridged before changes in output prices affect optimum patterns of land use; not, that is, if government restrictions on land use are based on rational considerations, and these considerations do *not* include the question of a divergence between private and social discount rates. The balance of evidence suggests that restrictions on the use of land for urban development are applied for what might loosely be termed 'environmental' reasons — that is, a belief that the population derives benefits from land in agricultural use which are not reflected in farming revenue. (In fact, category (b) of the four main ways — suggested in Chapter 2 — that social welfare can be influenced by government measures directed towards agricultural production and food supply.)

Second, is there any reason for believing that the appropriate rate of discount from a national viewpoint is lower than typical prevailing rates of interest on loanable funds? There are, in fact, substantial grounds for supporting such a view, though the issues involved are extremely complex. The matter is discussed in detail by Ritson (1977), and only a brief summary is given here.

It is perhaps helpful to approach the problem from a different standpoint, and ask 'Why should a nation wish to discount the value of future output at all?'. The basic answer is simply that having a unit of commodity available for consumption in one time period is not the same as having it available in another time period; the main fact which influences the relative value attached to a unit of commodity available in one time period will be the total amount expected to be available for consumption during the period in question. The use of a positive rate of discount in public investment decisions and in the public appraisal of policy alternatives is founded on the belief, based on historical experience, that investments tend to yield a positive return in real terms. In other words it is, in a sense, possible to convert a given amount of a commodity available for current consumption into a greater quantity of the commodity available in the future. The higher the normal expected return on a given quantity of the nation's resources devoted to investment, the greater should be the social discount rate.

Another influence, in principle, upon the appropriate social discount rate concerns people's preference for future consumption relative to present consumption; if the same quantity of output per person is expected to be available in two time periods, will the nation be indifferent concerning the time period in which one extra unit of a commodity becomes available? The greater the preference (if any), in this sense, for current rather than future consumption, the greater should be the social discount rate.

The link between the appropriate social discount rate and market rates of return on loanable funds is via individual and collective saving. The act of saving reflects individuals' willingness to forego present consumption expenditure in order to make funds available in the future — and they will be influenced by their expectations of future income, their current income and to some extent by the reward for saving (the rate of interest which can, however, be negative in times of high inflation). The quantity of saving undertaken, in turn, influences market rates of interest. Other things being equal, the greater the quantity of saving the lower will be market rates of interest. So a social rate of discount which is less than market rates will be justified if there are grounds for believing that the degree of saving initiated by individuals is less than the optimum amount from a national point of view. In the context of the present argument there are three reasons why this might be the case.

First, if the government were to take a more pessimistic view of the future economic environment than private individuals — which we might term a 'limits to growth' view (Meadows et al, 1972) — then the level of funds available for investment would be less than optimal.

Second, there is the possibility that a government might take a different view

from that taken by private individuals concerning the desirability of making output available in the future. In particular perhaps the government should be the 'guardian of unborn generations as well as the present' (Pigou, 1932). Third, private individuals may feel that their own saving decisions can have little impact upon the standard of living of their descendants. There are two reasons why individuals may take this view; one is that inheritance taxes reduce the future benefit of current saving; the other is that much of the prospects for one's descendants is probably in any case dependent on collective action to preserve the future environment. Thus the individual may well support the kind of action which would be associated with a low social discount rate, while his private actions would imply a much higher rate of discount.

CONCLUSIONS

A government which expects a long-term rise in the cost of food imports may, in principle, be justified in anticipating the rise by supporting the price of domestic produce, if it believes that domestic farmers are not basing their output plans on the same kind of price expectations. However, such a policy bears the cost of a higher degree of output in the short-term than can be justified on the basis of existing import prices, and is more likely to be applicable in the case of a less developed economy, with an agricultural sector dominated by small peasant producers, than to an advanced economy like the UK, with a modern capital intensive farm sector.

The other consideration which might justify government action in the face of an expected rise in the cost of food imports concerns the choice of a rate of discount over time. It has been argued that there are sound reasons for believing that from the point of view of the national interest, long-term investments in agriculture (and in particular decisions over land use) should be based on a lower rate of discount than typical prevailing rates of interest on loanable funds. It has also been argued that the rate of discount used will influence what appears to be the appropriate allocation of land to agriculture when a long-term rise in returns to farming is expected.

Because the issues raised are so complex, it is in fact rare for a government to use, explicitly, a low social rate of discount in public decisions. Nevertheless, there are circumstances in which a decision to do so is implicit, though the procedure tends to be restricted to cases where the use of market rates of discount implies a decision which appears to the policy-makers to be manifestly incorrect. (As a consequence, the policy-maker may tend to castigate formal cost-benefit analysis as a technique, rather than identify the choice of an incorrect discount rate as the culprit.)

Perhaps the best example of this in the UK concerns forestry. As recently pointed out, 'the seal of official approval for use of 10% as a discount rate in land use economics, set by the recent Treasury cost-benefit study of forestry, would seem, temporarily at least, to end the British forester's hope of an economic rationale for upland afforestation. No matter how many social benefits were dragged into the analysis, the study team found it impossible to achieve a positive net present worth for new planting' (Price, 1973).

Yet we continue to plant trees. And since the study team did attempt to 'drag' social benefits into analysis, without this providing a justification for afforestation, the official rationale of forestry policy must be the implicit use by the policy-maker of a social discount rate much lower than 10%.

Finally, it is evident that the arguments in this chapter relate to the appropriate size of the domestic agricultural sector, irrespective of whether extra output displaces imports or finds an export market. An expected long-term rise in world food prices is no more, or no less, relevant to government agricultural policy in a country which is 50% self-sufficient in food supplies than in one which is 90% or 120% self-sufficient.

4 Stability in food supplies

The aim of 'stabilising domestic markets' is perhaps the most popular and least contentious of all agricultural policy objectives. Everyone seems to agree that overcoming the 'problem' of instability is a prize worth fighting for, and few seem to detect many costs involved in achieving it. The 1947 Agriculture Act declared one aim of UK agricultural policy to be 'promoting a stable and efficient agricultural industry'. Article 39 to the Treaty of Rome specifies that one objective of the CAP is to 'stabilise markets' (European Economic Community, 1961). Japan aims at 'stabilisation of prices of farm-products' (OECD, 1974); Canada 'to stabilise agricultural product prices' (OECD, 1973). The list is endless; but what is the problem of instability in farm product prices?

Price instability can be characterised by two properties of a particular price movement. First, the price movement observed (which may be in either direction) must be short lived; using the converse of the criterion suggested in the previous chapter to identify a long-term price change, in this case the observed price movement must not be of sufficient duration to justify a change in the quantity of fixed capital devoted to the production of the commodity in question. Second, the problem associated with price stability must be derived, not from the particular level of prices applying at any time, but from the movement in prices.

In connection with this second criterion it should be pointed out that when a government introduces a policy which it describes as a stabilisation measure, very often it is the level of prices which is the cause for concern. In periods of rising prices, governments sometimes introduce policies to stabilise food prices, but the mechanisms used are usually only capable of restricting price rises. More common have been price stabilisation policies which a closer inspection

reveals to be price support policies. To give one example, towards the end of the 1960s there began to emerge, from the MAFF, news that it was the government's intention to introduce a beef stabilisation scheme. When the scheme itself appeared it turned out to be the imposition of a minimum import price for beef, which has the effect of removing the troughs, but not the peaks, from the fluctuations in the price of beef sold in the domestic market.

The two characteristics together provide one way of distinguishing between the problem of instability in agricultural markets and that of security of food supplies. At some point a rise in the price of imported produce is of sufficient magnitude, and of sufficient duration, for it to cause problems that cannot be classified as derived from the movement in prices. The question of security of food supplies is, of course, much more complex than is implied by this simple distinction, but for the moment it is necessary merely to emphasise that it is helpful to distinguish a separate set of problems associated with instability.

The case for stabilising agricultural prices has traditionally been producer- rather than consumer-orientated. It has been founded on the view that fluctuating farm product prices lead to unnecessary inefficiency in production. Price variations, it is contended, together with the typical time-lag in farming between the decision to aim for a particular level of output and produce becoming available for sale, lead to uncertainty for the producer concerning the price he will receive. Farm production decisions must be based on future expected, rather than (known) current, prices — and unstable prices make it difficult for producers to identify correctly the long-term trend in farm product prices. If producers are inaccurate in their price forecasts, the decisions they take will involve inappropriate resource allocations. Further, it is suggested that many agricultural producers are 'risk adverse'. As a consequence, they may decide on production plans which reduce variability in profit, and in particular reduce the extent of the loss experienced when prices move adversely, rather than employ plans which would be optimum when returns are averaged over a period of years. Such decisions (if producers really do act this way) may be sensible for the individual, but for the nation as a whole, involve losses associated with inappropriate resource allocations. (Blandford & Currie (1975) provide a careful analysis of the potential welfare gains from a policy which stabilises agricultural producer prices.)

In the UK, prior to EC membership, the system of guaranteed prices and deficiency payments had a stabilising effect on producer prices (as long as import prices were lower than the level of the guarantee, which was usually the case) but consumer food prices were influenced significantly by agricultural policy only for products for which statutory marketing boards had been established. Government policy, if anything, tended towards a reduction in the stabilising activities

of the marketing boards, and in one important case, eggs, the attempt to stabilise prices was abandoned with the demise of the Egg Marketing Board (Guter & Low, 1971). However, Figure 4.1 indicates that, for a sample of non-marketing board products over the (arbitrary) 10-year period 1955–1965, consumer food prices were nonetheless also fairly stable. So it is not clear whether the lack of policies directed towards stability of consumer prices in the UK reflected a belief on the part of the government that this was not a goal worth pursuing, or merely the fact that consumer prices did in any case tend to be fairly stable. Even the experience of the last few years is ambiguous in this respect. Certainly, the government has become more interested in food prices, but neither of the two major policy manifestations of this interest – the consumer food subsidy programme and the manipulation of the green pound – can reasonably be classified as stabilisation policies (though both have at times been described as such).

The food subsidy programme is perhaps best interpreted as an attempt to delay the impact of food price rises which would eventually have to be borne by consumers (Ritson, 1975). The EC green money system is, in principle, a mechanism for stabilising national prices in the presence of exchange rate movements. However, because exchange rates have tended to diverge consistently, green rates have also tended to be used by devaluing countries to ease the transition of consumers to rising prices.

THE CONSUMER AND PRICE INSTABILITY

One strand in the arguments on agricultural self-sufficiency in this country is the belief that stability in consumer prices is desirable. Yet firm evidence that consumers do benefit from stable prices is difficult to find. Whereas agricultural economists have developed a very credible set of ideas to substantiate the view that the nation bears a cost as a consequence of instability in farm product prices, they have not done so in the case of consumer prices. The crucial distinction here is that there need not necessarily be a time-lag between the decision on the part of a consumer to buy a certain quantity of food and the purchase taking place. Hence price instability need not induce the same kind of uncertainty with respect to consumer decisions as it may with producer decisions.

The economists' study of the impact of price instability on consumers (although little work has been done in this field) has tended to concentrate on the opportunities provided by price variations for consumers to shift their pattern of purchases. Indeed, some writers have come to the conclusion (which seems intuitively disturbing) that 'stabilisation of retail prices results in loss of consumer welfare' (Hill & Ingersent, 1977).

Figure 4.1
Retail food prices 1956—1965

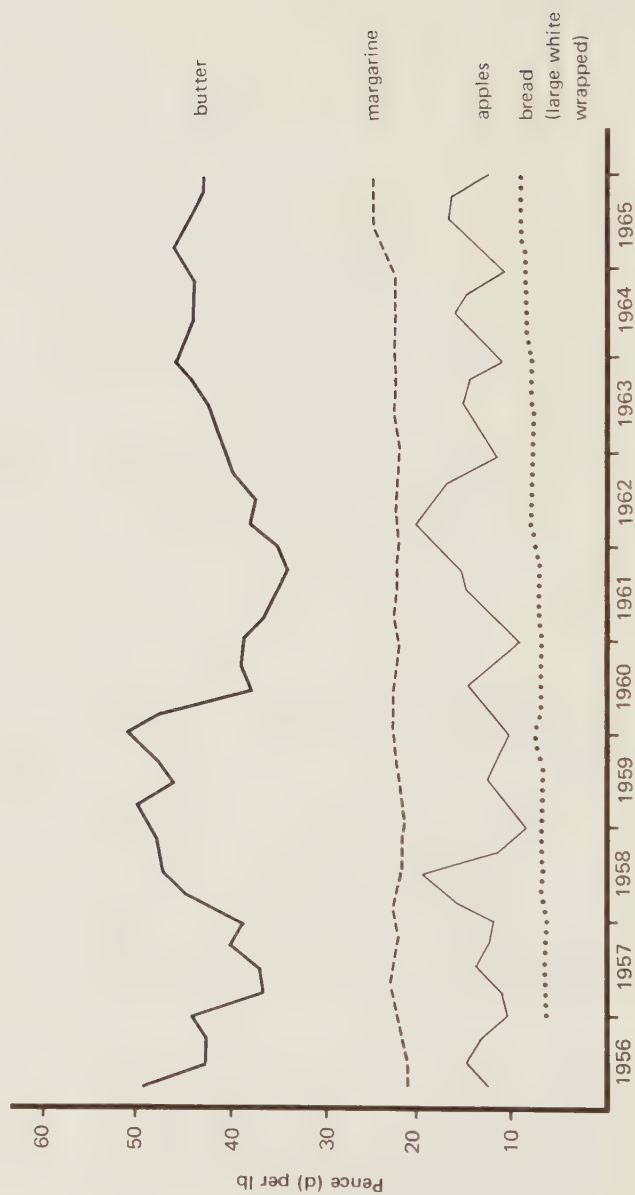
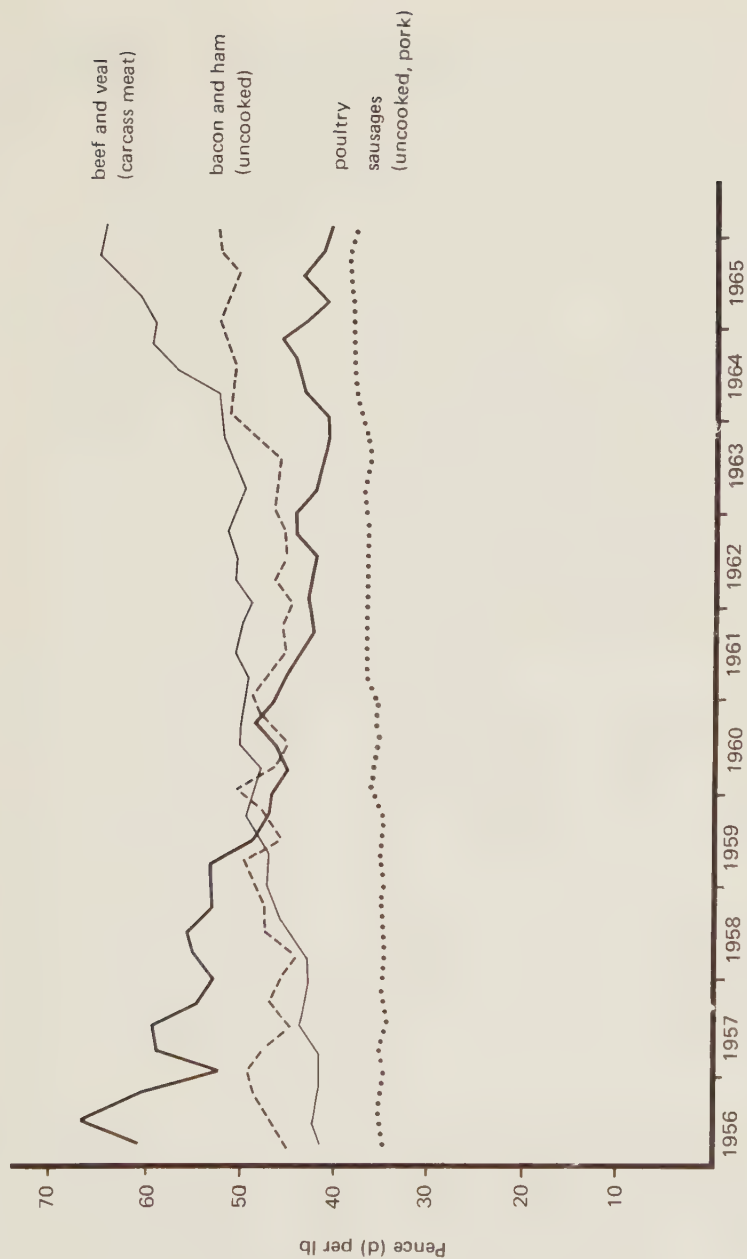


Figure 4.1 (continued)



Source: MAFF (various years)

In principle producers may also, to a limited extent, be able to gain by switching production plans in response to price variations. But just as the time-lag in production induces the uncertainty which may cause inefficiency in production, so it limits the opportunities for producers to exploit price fluctuations. Colman (1978) provides an excellent survey of the recent literature concerning the impact on producers and consumers of unstable prices.

The argument that consumers may gain from price instability is very difficult to appreciate without resort to formal economic analysis. Economists use a monetary measure of the welfare effect on a consumer of a price change, called 'consumer's surplus'. The benefit of a price fall is taken to be the difference between the new and old price on the original quantity bought, plus the difference between the new price and the price which would have just induced the consumer to buy each additional unit of the commodity, on the extra amount bought as a consequence of the price fall. The converse applies for a price rise. It follows that if prices are stabilised at the average expected price level, since consumers increase their rates of consumption as the price falls, using this method they will be worse off with stability than with price instability; compared with stable prices the gain in consumer surplus during periods of low price will exceed the loss experienced during high price periods.

While accepting that the surplus measurement technique is an extremely valuable aid to assessing the welfare effects of different agricultural and food policies, considered as alternatives over some given time period, the author considers it is not such an appropriate measure of the impact on consumers of price instability. First, the assumption that fluctuating prices do not induce any uncertainty or inconveniences for consumers must be open to question. It may be legitimate to ignore adjustment lags and any disturbance associated with altering purchasing patterns when considering once and for all changes in consumer prices, but it is surely not legitimate to do so when considering constantly fluctuating prices. Second, there is the strong possibility that consumers may prefer stable welfare levels. In other words, though a conventional economic welfare measure may show that the consumer can be better off over time with fluctuating prices, the consumer himself may prefer a lower average, but less uneven, pattern of welfare.

Third, it is questionable whether the same monetary measure can be used to estimate the benefit of a price fall and the loss associated with a price rise. This may be illustrated by an example. Suppose a low-income household purchases 100 units per year of a staple food product. The price alternates between £1 per unit and £3 per unit but the household continues to purchase 100 units of the product, reducing consumption of other products in high price periods. The conventional consumer surplus measure would lead to the conclusion that, in this case, the household would be equally well off with a stable price of £2 per

unit. Compared with the stable price, instability gives a gain of £100 in low price years but a loss also of £100 in high price periods. (The consumer surplus measure does not, in this example, show a gain from instability, because the household does not increase quantity purchased in low price periods.) But as far as the household is concerned, the £100 worth of goods which must be given up when the price rises to £3 per unit will surely be more highly valued than the £100 of extra goods which can be purchased in years of low price.

None of these arguments implies that consumers must gain from stable prices, only that they are not necessarily worse off with a policy which stabilises prices at the average level of (otherwise) fluctuating prices.

The Committee set up in 1962 to inquire into Fatstock and Carcass Meat Marketing and Distribution in the UK, under the chairmanship of Verdon-Smith, did tackle the question of the impact on consumers of price instability and tended to be critical of the practice of stabilising retail meat prices. 'We have received no convincing evidence either way as to whether the majority of consumers prefer stable or moving prices on the other hand there are important reasons why prices should be allowed to move more freely' (MAFF, 1964).

However, there is a different and perhaps more defensible justification of policies to stabilise consumer food prices. This is based, not on the impact of unstable prices on consumer welfare, but on the impact of such price instability on the performance of the economy as a whole.

One problem associated with managing a modern mixed economy, such as that of the UK, is that what goes up does not always come down. Both money wages and the price of many commodities appear to be flexible upwards but inflexible downwards. The UK government has recently found itself having to cope simultaneously with the twin evils of inflation and unemployment. In the presence of a wage/price inflationary spiral, one might well argue that fluctuating food prices contribute, by a ratchet effect, to the problem of inflation. To go much beyond simply stating that fluctuating food prices may contribute to inflation requires empirical investigation. Is there a measurable link between food price instability and inflation and what is the relationship between import and retail prices? (Do retail prices fluctuate less than import prices; do food manufacturers pass on price rises but not price falls?)

STABILITY MECHANISMS

A government which wishes to insulate the domestic market from the impact of fluctuating import prices can do so in two ways. The first is to apply policies which regulate import quantities so as to maintain a constant level of supplies coming onto the domestic market. The second possibility is the use of stocks.

The usual approach would be an import tax/subsidy system. A target level for domestic prices is specified. If the policy is directed solely towards stability the target price level would be the long-term average (ie 'expected') import price. Imports are subsidised when world prices exceed the target level and taxed when world prices are less than the target price. The tax or subsidy varies so as always to bridge the gap between the target domestic price and the price at which supplies are available from world markets. If the target price is correctly specified, the policy should be self-financing.

The tax/subsidy system might be replaced, or more probably supplemented, by a stocks policy. Attempts to stabilise agricultural product prices by the use of stocks are widespread and there is an extensive literature on the subject. However, most schemes have been designed to offset quantity fluctuations in domestic output for non-traded commodities, or have formed part of an international agreement to attempt to stabilise trading prices. Nevertheless, in principle, if imports of a commodity were under the control of a state trading organisation, domestic prices could be restrained in periods of high import prices by the release of previously accumulated stocks (rather than by import subsidies). Whether or not the addition of a stocks policy would represent a gain for the country concerned would depend on the skill of those managing the stock. If the average price of purchases for the stock is less than the target price (and the cost of storage is relatively small) there would be a gain over the use of import subsidies. However, if the stock managers were skilful enough to purchase during periods of low prices they might be tempted to forget the stability objective and dispose of the stock during periods of relative shortage, not on domestic markets at the target price, but on the higher priced world market.

STABILITY AND SELF-SUFFICIENCY

This tax/subsidy system (possibly supplemented by stocks) might be described as a 'pure stabilising policy' — that is a policy which attempts to hold import quantities constant in the face of price variations, but does not seek to influence the long-term trend of import quantities. However, many believe that one benefit of increased agricultural self-sufficiency is a reduction in the extent to which domestic consumers are subject to unstable world food prices, and in any case, the policy instruments that can be used to stabilise import prices — particularly the variable import levy — are often also the policy instruments which are used to support domestic prices and which thus stimulate domestic supplies.

In fact, the level of self-sufficiency does not radically affect the problem of preventing fluctuating international prices for agricultural commodities from disturbing the stability of the domestic market. The main link between

different degrees of agricultural self-sufficiency and imported food price stability is that a growth in self-sufficiency reduces both levy revenue and import subsidy expenditure, because of the smaller volume of imports involved. A government might find it less feasible to operate a stability policy the greater the magnitude of fluctuation in revenue and expenditure associated with the policy. In particular, a low income country might find it difficult to avoid immediate spending of revenue from import taxes, and thus difficult to raise extra revenue for import subsidies.

Domestic agricultural expansion might itself be stimulated by an import tax system – that is when the domestic target price exceeds the long-term average import price. If the resulting growth in domestic output is sufficient for the level of domestic production to exceed the quantity that would have been purchased by domestic consumers in high price periods, then part of the cost in high price periods becomes loss of potential revenue from exports to the higher price world market.

INTERNATIONAL REPERCUSSIONS

If stability in food prices is regarded as advantageous for the net importing country, the tax/subsidy system appears a very attractive way of counteracting the impact of fluctuating import prices. The system is very neat and can be self financing – though it could well involve considerable problems for a government because of variations in government tax revenue and expenditure. If a pure stabilisation policy is applied, then there are no losses involved due to expanding high cost domestic output at the expense of (on average) lower cost imported supplies. Admittedly there is the possibility that in practice import taxes will be used as a method of raising domestic market prices in the long-term, rather than just stabilising them; but, as mentioned earlier, this is a problem associated with any stabilisation scheme in agricultural policy – the term can cover a multitude of sins.

However, attention should also be drawn to one severe problem associated with the tax/subsidy system of counteracting the impact of fluctuating import prices. The problem is that what is a stabilisation policy for the domestic market is a destabilising policy for other countries. The world trading system ensures greater price stability in each domestic market than would be experienced if trade between countries were not possible. The reason for this is that unplanned variations in output, which are the main cause of instability in agricultural product markets, are not perfectly synchronised throughout the world. Good and bad harvests tend, to some extent, to cancel one another out. With flexible trade policies, a country which experiences a shortfall in output below the level

planned by its farmers, will import more (or export less) than it would if output plans had been fulfilled. As a result, the price rise in domestic markets will be much less than if the full extent of the production shortfall had to be absorbed by domestic consumers. Similarly, in the event of an unusually good harvest, flexible trading policies will mean more exported or less imported than in an average year. With trade, domestic markets will be much more stable than if individual country markets are isolated from one another.

For this system to work effectively, however, it is necessary for each country, not only to accept the benefits of the world market absorbing variations in its own output, but also to be prepared to absorb part of the net variation in world output. The import tax/subsidy system discussed above does not do this. If one country reacts to a period of high prices by introducing a policy to hold its import (or export) quantity constant, the world price will have to rise that much more to absorb the shortfall in production. Similarly, in periods of above average world output, trading prices will fall more if some countries have adopted policies to maintain stability in their domestic markets, preventing any increase in their imports or decrease in their exports. Clearly all countries cannot adopt policies to stabilise import or export quantities in the face of a fluctuating world market. In periods of above average output throughout the world, the exporting countries would find the price at which they were able to dispose of their surplus produce falling to zero. In periods of production shortfall, importing countries would discover that the price of imported food was rising indefinitely. Something would have to give. This is, in fact, one conclusion of Josling (1977) who attempted to develop a formal trade model which has, as a starting point, an assumption that governments have adopted policies which attempt to ensure that imports equal the excess of consumption over production (and exports the excess of domestic production over consumption) at a target domestic price level — irrespective of whatever the world price happens to be.

This kind of argument may appear irrelevant from the point of view of the individual country. But the country for which imports or exports of a commodity are significant in world terms cannot ignore the impact of its own trade policies on other countries. It may find that if it applies rigid policies to protect its domestic market from fluctuating world prices, other countries will do likewise and world prices will fluctuate more wildly. It may come to the conclusion that the pursuit of an international agreement to increase the flexibility of patterns of trade in farm products provides greater scope for stabilising food prices than the application of a policy which attempts to insulate its domestic market from world events. On the other hand it may, of course, conclude that the pursuit of international trade agreements is a fruitless task and that it should resort to trade controls in order to stabilise domestic food prices.

CONCLUSION

Economic theory does not provide a clear answer as to whether consumers gain or lose from stable prices, though there is some reason to believe that, in the case of food products, they may prefer stable prices. Fluctuating food prices may make the task of managing an economy — perhaps that of managing the whole social system — more difficult, particularly when inflation is a major problem.

The tax/subsidy system of insulating domestic agricultural markets from fluctuating import prices is very neat, but possesses the disadvantage of contributing to greater instability on world markets. A significant net importing country may find that participation in an international agreement to increase mutually the flexibility of agricultural trading policies provides a sounder long-term solution to stabilising food prices than the unilateral imposition of a policy which attempts to hold import quantities constant in the face of fluctuating import prices. Although the national and international approaches to stability are, in a sense, diametrically opposed, some compromise might be possible. A country could hold the tax/subsidy system in reserve as a method of partially offsetting substantial movements in import prices if an international agreement proved ineffective.

5 Security in food supplies

The word which seems to capture most aptly the particular fears roused in food importing countries by the world food crisis is insecurity. Yet 'security' has often been used in connection with the kinds of problems discussed in the previous two chapters under the labels 'foresight' and 'stability'. This raises the question of whether there is in fact a separate identifiable problem which can be described as 'security of food supplies'.

Two kinds of policy problems associated with the price of imported food have so far been suggested. The first was that of achieving an appropriate allocation of national resources when a long-term rise in the price of food imports is expected. The second concerned the impact of fluctuating food import prices on domestic consumers and on the task of managing an economy. In both cases the policy problem was identified by singling out a particular kind of price movement.

The policy problem which remains is that associated with a sudden, unexpected, very substantial and sustained rise in the price of food imports (included in this category would be food imports unavailable for a period exceeding that covered by normal stocks). Because the price rise is unexpected, no long-term adjustments of the productive resources of the economy (of the kind discussed in Chapter 3) will have been made in anticipation of the price rise; but the price rise is severe and prolonged, so that it is not merely fluctuating prices that make difficulties for the domestic economy. The problem is that of coping with very expensive or unavailable food imports during a period of several years, and during which the production pattern of the economy is adjusting to the new price level (if it is expected to be maintained). The kind of policy which a government can adopt in order to avoid such a difficult period might best be described as an insurance policy.

SECURITY AS AN INSURANCE POLICY

The essence of any insurance policy is removing (or reducing) the impact of something unpleasant happening — at a cost; a cost in the sense that if the unpleasant event is one to which a monetary value can be attached (such as the cost of rebuilding a house), then the annual insurance premium will exceed the monetary value of the event multiplied by the probability of the event happening in any year. (For example, given a long enough life, one would discover that the amount of money paid out on household fire insurance was greater than the amount of money received from the insurance company for the times one's house burned down.)

When the event to be insured against is not one to which a monetary value can easily be attached, a subjective value must be placed upon it before a decision can be made on whether or not to take out insurance. This value, when reduced to terms of purchasable commodities, must be less than the cost of insurance — otherwise the decision no longer involves insurance but would be similar to any rational economic decision to choose one bundle of goods in preference to another when offered the opportunity to do so.

Thus, in a sense, one always loses with insurance — or would if it were possible, as an alternative, to spread the unpleasant effects of the event to be insured against over a prolonged period. Because this is often not possible one may be prepared to pay more each year to avoid the inconvenience of a large payment in a particular year. Insurance can therefore be interpreted in another way — as a payment for the privilege of being allowed to spread the cost of some unpleasant event over a period of years. An insurance payment can therefore notionally be broken down into two elements; an instalment towards paying for the cost of the event insured against, and additional payment for the privilege of being allowed to pay for the event in this way. The size of this second element, relative to the extent of the inconvenience of bearing the event as an alternative to insuring against it, determines whether taking out an insurance policy is worthwhile. One might reasonably postulate that the greater the inconvenience of the event, the more the individual is likely to be prepared to pay for being able to spread the cost. This is why most insurance is against events which, if they did occur, would have most unpleasant consequences.

The above discussion of the nature of insurance suggests that an enquiry into security of food supplies should proceed first by considering the cost to a food importing nation of a sudden rise in the price of food imports; then by asking how much more inconvenient it would be for the nation to bear this cost in a particular year rather than paying for it, as it were, by instalments; and finally reduce the vulnerability of the nation to a rise in the cost of imported food.

Of course it will never be possible to attach values to these costs, or assess

the probability of a particular price boom occurring, in the way one can with something like house insurance. The best that can be hoped for is to develop a broad 'feel' for the relative orders of magnitude involved. In essence, however, the problem is the same, and a rational decision requires some attempt at quantification — albeit implicit — so that costs and benefits can be compared. Also to be taken into account perhaps are the subjective benefits of this kind of insurance — the fact that people feel comfortable in the knowledge that they possess an insurance policy (whether or not the policy can really be justified on the basis of more measurable costs and benefits).

REACTIONS TO RISING IMPORT PRICES

To try to assess the kind of value a nation might place on avoiding the consequences of a sudden and substantial rise in the price of food imports, it is useful to consider how a country might be expected to react to import price rises of alternative degrees of severity. This question was mentioned briefly in Chapter 1 in connection with the impact on the UK of the world food price boom of 1973–1975. Although in this case there were some marginal changes in patterns of food consumption, most of the burden appears to have been taken in the form of a cut in the consumption of non-food products, partly because the food subsidy programme prevented the full impact of higher import prices reaching consumers. In 1974 about 1% of national income was required to pay for the increase in the cost of food imports.

However, a much greater rise in the price of food imports would be likely to bring about a considerable reduction in the quantity of food imports — either because a major proportion of the price rise would have to be passed on to consumers or, if consumer prices were held, direct state trading (and rationing) would be necessary; the exchequer would not be able to support a comprehensive food subsidy programme which encouraged consumers to maintain previous patterns of consumption as if nothing had happened.

In either case, the reaction of the country would be similar — a reduction of food imports, related to a switch in the composition of diets and methods of food preparation, and to such changes in the composition of domestic farm output as are possible in the short-term. A state trading organisation would probably introduce policies to promote these changes, as the appropriate response to the changed world environment and these changes would also be the consequence of the way consumers are known to react to a general rise in food prices. The higher the rise in import prices, the more likely it is that direct state food marketing would be necessary, because allowing a rise in consumer prices to bring about the appropriate adjustments ignores the distributional impact of rising food prices. For a high income country, a short-term reduction in food imports would

be brought about mainly by a shift towards direct consumption of vegetable protein.

Thus the short-term cost to the food importing country of a sudden severe rise in world food prices is a combination of a cut in consumption of non-food products (to pay for higher priced imports and to bring about such increases in domestic output as can be immediately implemented) and a change in the composition of diets, involving, in particular, a cut in the consumption of animal products, with some overall cut in average levels of food intake. There is, of course, a limit — dictated by minimum levels of food intake — to the extent to which a country can reduce food imports. Once such a limit is reached, starvation can be prevented only by cutting consumption of non-food products, to pay for food imports.

The point at which a country finds that it is unable to feed its population (because domestic supplies are insufficient and because the production of exportable commodities fails to generate enough foreign exchange to pay for the required food imports) is a crucial one, not only because the problem now becomes one of life and death. As argued later, this is an occurrence which can be insured against only by a policy directed towards supplying food from domestic sources. In such circumstances, if a country is just able (from domestic production and stocks) to feed its population, then it has presumably only one policy option — to ignore the rest of the world and keep its own population alive. This is the attraction of self-sufficiency in food supplies; and this surely is what is meant ultimately by security in food supplies.

HOW SIGNIFICANT IS THE THREAT FACED BY THE FOOD IMPORTER?

In fact, such an eventuality is extremely unlikely for an advanced country even if it is a major food importer. One must ask what could cause the price of food on world markets, relative to the price of other products, to rise so much and so rapidly that an advanced country could not generate sufficient foreign exchange to buy enough food to bridge the gap between domestic supplies and minimum requirements?

One possibility is a deliberate embargo by food exporting countries which is equivalent to food imports being given an infinite price. Since this action would result in death by starvation in the importing country, it would amount to an act of war. This is, of course, the basis of the concern expressed in the UK, following both the First and Second World Wars, over the low degree of agricultural self-sufficiency. Unfortunately there now exist simpler and more rapid methods of destroying a country's population than withholding food supplies. The case for increased agricultural self-sufficiency as a safeguard against supplies being cut off in time of war has to a considerable extent been invalidated by the

technology of destruction. This is perhaps an over-simplification. It is possible that a country could find its food supply cut off because of hostilities which did not involve it directly and which were restricted to so-called 'conventional' warfare.

There remains the possibility that the forces of supply and demand for food products traded internationally could force up traded prices to such an extent that a major food importing country was unable to purchase enough to sustain its population. This could happen in any particular country only if total world food exports were insufficient to meet the minimum requirements of all importing countries richer (in terms of capacity to import) than itself. For a developed country importer, traded food prices would have to rise very high indeed before such a position would be reached; the exports available would be roughly the excess over minimum requirements in those countries able to feed themselves. (Few countries would be likely to allow their levels of food consumption to rise much above minimum requirements when they could, as an alternative, export what would be such a valuable commodity.)

The low-income importing country is not so fortunate. When world food prices begin to rise there is little scope to cut imports by altering consumption patterns and it may be difficult to generate enough foreign exchange to pay for more expensive food imports. A world price level which induces the residents of high income countries to begin to switch from animal to vegetable protein products may mean starvation in the low income importing country.

So, conceptually, the principles applying to food security are the same for the high or low income importing country. But the high income country may be able to feed itself in an emergency, while remaining a substantial food importer in normal circumstances, and it is in any case less likely to encounter world market conditions which could threaten its capacity to import enough food to meet minimum requirements if it took extreme enough measures (by altering patterns of consumption of both food and non-food products). Because of the exceptional world circumstances required for it to be threatened in this way, it is argued in the next section that only a policy directed towards food from domestic sources would provide a sensible insurance policy.

The threat to a low income country is much more immediate but, similarly, because the threat does not require such an exceptional development in the world food economy, a low income country can consider the attractions of international supply agreements, and policies directed towards stocks of non-food commodities, as methods of achieving greater security in food supplies.

A POLICY TO SECURE THE NATION'S FOOD SUPPLY

Concentrating on the extreme situation (inability to feed a population) is not to deny the very real costs to a country such as the UK if it were forced, by rising import prices, to undergo a radical alteration in diets, and to cut consumption of non-food products (even though still in a position to feed itself). Nor is it to deny the advantages in such circumstances of higher levels of food self-sufficiency than necessary to meet minimum requirements. Increasing self-sufficiency could still be an insurance policy which might or might not be worthwhile. But the problem is a very different one, not only because it is no longer a case of life and death which is being faced; in the grey area between self-sufficiency at normal levels of food consumption, and self-sufficiency at minimum consumption levels, there is a world price level which turns the importing country into a potential food exporter. The food importing country must choose whether to bear the burden of rising import prices by cutting consumption of food or consumption of other products. But if world food prices rise enough, the normally net food importing country, which is nevertheless able to provide more than its minimum requirements from domestic sources, must choose whether to take the benefit of this by enjoying above minimum diets or higher than normal consumption of non-food commodities.

The significance of this can perhaps best be appreciated by again considering the response of a country with a low degree of food self-supply to import price rises of various degrees of severity. The response may be divided into three phases: Phase 1, in which the country responds by both a change in patterns of food consumption towards minimum levels and a cut in non-food consumption; Phase 2, in which food consumption is reduced to the minimum and the country continues to cut consumption of non-food products in whatever way possible in order to raise foreign exchange; and Phase 3, in which it is unable to obtain enough food to keep all of its population alive. The dire consequences of Phase 3 are such that virtually any insurance policy is worthwhile if there is a measurable chance of it occurring; whatever the premiums, their cost will be out-weighed by the benefit of having food supplies in time of need.

In principle there are four ways in which a nation's food supply can be assured. These are by:

- (i) Raising the degree of agricultural self-sufficiency;
- (ii) Holding stocks of food products;
- (iii) Holding stocks of foreign exchange or saleable non-food commodities;
- (iv) Entering into supply agreements with other countries.

As already indicated (iii) and (iv) can be ruled out in the case of Phase 3. The kind of world environment necessary for this to occur would surely lead to supply agreements being broken, and food would be such a valuable commodity

internationally that production or storage of food would be much better alternatives than the storage of goods or foreign exchange that might be traded for food produced in other countries. In addition, if a policy to insure the nation against starvation in an emergency is deliberately and openly adopted then one must take account of the extent to which the public can recognise that the policy does provide security — for part of the benefit of such a policy is the feeling of security it provides. Thus even if, after detailed consideration, it did seem that such security could be provided by — say — international agreement, the policy directed towards supplies of food from domestic resources might still be preferred on the grounds that it was more immediately recognisable to the population as one that fulfilled the security objective.

Phase 2 differs from Phase 3 only in terms of what is insured against. The concern is also with an exceptionally severe reduction in living standards but not to the extent that one can confidently claim, as with Phase 3, that 'virtually any insurance policy' should be taken out: some policies will be regarded as too costly.

Nevertheless, most forms of insurance are still likely to appear worthwhile and (iii) and (iv) can probably again be ruled out relative to (i) and (ii) as food would be such a valuable commodity in this world environment that the appropriate insurance policy would almost certainly be directed towards food supplies. So from a policy point of view, it is perhaps best to combine Phases 2 and 3. This is convenient too from a more practical point of view. There is now a readily understood policy target: that the country should be able to meet minimum food requirements from domestic sources.

Although the target is readily understood, the actual minimum requirements needed will not, of course, be easy to estimate in any particular case: it is doubtful whether nutritionists would agree in defining a minimum diet; there may be a considerable gap between what is regarded as the minimum to maintain life and what is necessary to sustain a healthy population; it is uncertain how quickly domestic production could be raised in an emergency and thus to what extent it is the capacity (potential) output, rather than normal domestic output levels, towards which policy needs to be directed. Perhaps most difficult of all is the need to make assumptions concerning the extent to which the country's economic and political system would, in practice, be able to match what could, in principle, be achieved. How equal a distribution of what is available could reasonably be assumed; how efficient could be the conversion of available raw materials to food products? Nevertheless, the margin (in terms of domestic agricultural capacity) covered by these uncertainties might be quite small relative to total food consumption. Whatever the difficulties of calculating the amount of food necessary to ensure that in an emergency minimum requirements could

be met from domestic supplies, it is not as difficult as estimating the safe level for supplies from domestic sources when the possibility of purchasing some supplies from other countries is included. In other words, given the breakdown of the normal world trading system (which would necessarily be associated with food prices so high as to take the kind of importing country under consideration into Phase 2) there is really no way of predicting where Phase 2 ends and Phase 3 begins.

Thus, the severity of the conditions associated with Phases 2 and 3, and the impossibility of predicting the level of domestic supplies required to insure a country against Phase 3 but not against Phase 2, results (in terms of the subject matter of this chapter) in a relatively straightforward policy problem; it is necessary to estimate what combination of stocks, domestic production and domestic agricultural capacity would be consistent with the nation being able to meet its minimum food requirements from domestic sources if imports suddenly became unavailable.

POLICIES APPROPRIATE TO LESS SEVERE DEVELOPMENTS

Phase 1 covers everything from a minor hiccup in world food markets to a rise in world food prices sufficient to bring about quite radical changes in consumption patterns in the richer food importing countries. Prices nevertheless remain within a range which would still lead the consumers in developed countries to purchase a greater variety and quantity of foodstuffs than those dictated by minimum requirements.

The policy issues are now much more complicated. First, the country must consider whether the insurance premiums paid (in terms of lower normal living standards) are worthwhile in return for the benefits of having more food available during the high price period. Second, there are now more policy options. The country must compare the merits of supply agreements with those of policies to increase domestic production. Supply agreements may still be broken but the consequences of this are less severe for the importing country. Third, there is still a policy problem in the high price period if the normally importing country has (from either domestic sources or via supply agreements) more food available than needed to meet its own minimum requirements; should it maintain levels of food consumption, or should it sell some of this valuable commodity to other countries?

In fact, a country is only likely to sustain consumption levels in the short-term. It is rare for countries to maintain levels of consumption of commodities in excess of those indicated by world values over a prolonged period. In the case of food, the reason for doing so would be because generalised food subsidies

were seen as the best way of dealing with the problem of low income groups. But if the high prices were maintained, other ways would be found of dealing with what is, in reality, a problem of income distribution rather than a problem of food prices. The reason for foregoing benefits of high price export sales would be to ease the adjustment to the new consumption levels implied by the world market. This is an objective which could also be achieved by import subsidies, if reserves of foreign exchange were adequate. This would, in fact, be the third of the possible insurance policies (iii) listed above.

Thus the kind of problems now being insured against will be similar to those considered in the previous chapter as problems of 'instability'. They differ in that they involve the ability to ease adjustment to a new price environment, rather than preventing adjustments which would soon be reversed because price movements are short-lived. It may though in any particular case be very difficult to distinguish between the two.

Whereas policies directed towards supplies of food from domestic sources seemed the appropriate choice for dealing with the situations described as Phase 2 and Phase 3, this need not be the case under Phase 1 conditions, and in considering the appropriate policy response in the case of Phase 1 it is important to remember that one loses with insurance. With a policy which increases agricultural self-sufficiency, the aggregate losses in normal years (in terms of the excess of domestic production costs at the margin over import prices) will be greater than the benefits in high price periods. If this is not the case, then insurance is not involved. The problem is 'merely' one of ensuring an appropriate longer term allocation of domestic resources, or, in the language of Chapter 3, to match domestic production costs with the 'expected' price of imports -- which will be higher than the 'normal' price. Similarly, with a stocks policy, if enhanced value of produce in high price periods more than covers the cost of storage, then the storage policy can be validated on normal commercial reasoning.

An international supply agreement involves paying more for the product than ruling world market prices, in return for preferential treatment (ie, cheaper product) in high price periods. Such an agreement is only an insurance policy if aggregated cost in 'normal' years is greater than the benefits in the high priced period; if not, then the agreement makes sound commercial sense for the importing country (but is of course a poor and therefore unlikely deal for the exporting country, unless it is the exporting country which wishes to insure itself against a period of low world prices).

In the case of stocks of foreign exchange, the insurance cost is that involved in the choice of a non- or low-earning asset; the main problem of this solution is uncertainty over what degree of reserves will be necessary to hold food imports

constant in the case of rising prices; by comparison food stocks or food supply agreements both have the merit of a more easily defined policy target.

INTERNATIONAL TRADE AND SECURITY IN FOOD SUPPLIES

Of the four possible insurance policies listed above the option of increasing agricultural self-sufficiency seems the least appropriate when the benefit is being able to avoid sudden adjustments (in domestic consumption patterns) to a rise in the price of food imports. The reason is connected with the argument introduced in the previous chapter, that 'what is a stabilising policy as far as the domestic market is concerned is a de-stabilising policy to other countries'.

In this chapter the emphasis has been on the potential danger to security of food supplies posed by reliance on imported produce, yet a country which relies entirely on domestic production for its food supplies is under equal, if not greater, threat. The paradox of the commonly accepted association between agricultural self-sufficiency and food security is that if a number of major food importing countries simultaneously attempt to increase their security by becoming self-sufficient in food supplies then, in aggregate, they may merely reduce food security for all.

The provision of a regular supply of food products is an important policy issue, not only because food is the most fundamental of all man's requirements, but because guaranteeing supplies of food is, in any case, more difficult to achieve than guaranteeing supplies of most other products. Apart from continually attempting to develop technology to reduce the extent to which agricultural output is subject to unplanned variations, man has tackled the problem of ensuring regular supplies of food in two ways. The first has been storage – the biblical tradition of accumulating in years of abundance to withstand the lean years; the second and more important has been trade.

A well established trading system in food products makes it possible for a poor harvest in one part of the world – which might imply a disastrous food shortage if trade were not possible – to be absorbed by a relatively small reduction in food consumption throughout the world. An efficient world trading system is undoubtedly an essential part of ensuring security in food supplies for all the world's people.

Thus increasing food self-sufficiency is consistent with increasing food security only as long as there is a world food trading system to draw upon in years when food supplies from domestic sources are inadequate; if all current food importing countries replaced imported produce by domestic supplies then this would not be possible. For this is what full self-sufficiency implies: if there are no food importers there are no food exporters and there will be no inter-

national trade in food products. The major food exporting countries will discourage investment in farming, and their produce will no longer be available for export when it is most needed.

It can of course be argued that this is of no consequence to an individual country; but can a major food importing country ignore the impact of its policies on world food security, when its objectives could be achieved by other policies (such as stocks or supply agreements) which would be consistent with the promotion of world food security?

CONCLUSIONS

There is a strong case for a food importing developed country to aim for a degree of agricultural self-sufficiency which is consistent with the ability to meet the minimum food requirements of its population from domestic sources in times of emergency. The reasons for this are as follows:

- (i) If there is any measurable chance of an emergency occurring, then, the consequences of not being able to meet minimum requirements are such that virtually any insurance policy will be regarded as worthwhile. The benefits of being able to feed the population in an emergency must outweigh the costs of foregoing the advantages of cheaper imports in normal conditions;
- (ii) In the kind of world environment where a developed food importing country found itself unable to generate enough foreign exchange to pay for food imports, a policy to encourage supplies of food from domestic sources would be the only effective source of insurance. Supply agreements would probably turn out to be worthless and food would, in any case, be the best store of wealth in these circumstances;
- (iii) One benefit of a policy to secure the nation's food supplies is probably the feeling of security provided for the population. People are more likely to believe they are secure if the insurance policy involves supplies from domestic sources, whether or not there is an alternative policy which could provide the same degree of security;
- (iv) In principle it is possible, for a given set of world market conditions, to conceive of a minimum safe degree of agricultural self-sufficiency which is less than that consistent with meeting minimum food requirements from domestic sources. However, in practice, the difficulties of specifying the appropriate level of domestic production required for this suggest that the only sensible security target is one which is designed to cope with a period in which no imports of food are possible;
- (v) If a number of major developed food importing countries were able to meet minimum food requirements in an emergency, it would then be much less likely that they would ever experience the kind of world market conditions

which would threaten their existence if they were unable to feed themselves. This is because, should there be a large production shortfall in food exporting countries, the traded prices would rise to astronomical heights only if the rich importing countries were prepared to pay any price to obtain a share of available food. They would be induced to do this only by the threat of starvation of their people; if it involved just the inconvenience of altering dietary patterns then the country would drop out of the bidding as prices rose. Thus, the adoption of a policy enabling a country to meet minimum food requirements from domestic sources in an emergency is consistent with world food security; such a policy would help increase security of food supplies for countries which, for whatever reason, were unable to meet minimum requirements from domestic sources. Such a reason might be, for example, because they had chosen not to adopt the emergency food security policy themselves; because they could only produce enough food for their populations at enormous costs (as in Hong Kong); or because they had the misfortune of having a shortfall in domestic production coincide with a shortfall in production from exporting countries.

When considering levels of domestic production in excess of those required to meet the minimum nutritional needs of the population, the case for increasing agricultural self-sufficiency to increase the security of food supplies rapidly evaporates. Here the benefit is the convenience of being able to avoid abrupt adjustments in patterns of consumption following a sudden change in world market conditions – and there are other, probably less costly policies (such as supply agreements or stocks of food) which can also achieve this objective. More important, the policy of increasing self-sufficiency is no longer consistent with world food security. As a country nears food self-sufficiency in normal circumstances, the threat to food security posed by a shortfall in domestic supplies gains in significance relative to the threat associated with imported supplies. The ability to draw on imports to counteract fluctuating domestic supplies is a vital element in food security. It has always been so, and if the present importing countries were to take action which precipitated the end of world trade in food products, they would do so at the cost of less food for all and particularly less food when it is most needed.

6 Implications for UK agricultural strategy in the context of membership of the EC

For a term which has found such popular use in public debate, 'agricultural self-sufficiency' is in fact a very elusive concept. A useful composite measure of a country's actual or potential net trading position in one or a group of commodities has come to be a major objective of agricultural policies. Yet it proves very difficult, once arguments in favour of increased national self-sufficiency in food supplies are pursued beyond a superficial level, to identify just what it is about agricultural self-sufficiency which brings a national benefit, and why therefore it should rank as a major objective of government agricultural policies. Sometimes it seems that self-sufficiency is only peripheral to the solution of the problems with which it is associated. For this reason, although it was the renewed interest in the merits of increasing UK agricultural self-sufficiency that prompted the Centre for Agricultural Strategy to commission this study, the study itself has concentrated upon attempting to identify problems that might be associated with food imports and upon suggesting appropriate policy responses to these problems -- which need not necessarily involve changes in the nation's degree of agricultural self-sufficiency.

In Chapter 2 it was argued that the various concerns over the consequences of importing a significant proportion of the nation's food supplies all basically relate to some aspect of the price of imported food. Further, within this generalisation, it was suggested that arguments in support of increased agricultural self-sufficiency can be categorised according to what kind of price problem is thought to be involved.

The first distinction made was between arguments involving the current cost of food imports and those involving expected, or unexpected but nevertheless feared, future changes in the price of imported food. The former have received much detailed attention in the UK in the post-war period. Research has concen-

trated on two related issues: the contribution of UK agricultural expansion to the balance of payments and the efficiency of UK agriculture relative to the cost of imported produce. The balance of payments question was touched upon in Chapter 1 and reference made to the extensive literature on the topic. The comparative resource efficiency of UK agriculture was an important component in calculating the cost of achieving certain import saving targets; this is at present the subject of another Centre for Agricultural Strategy study.

The steep rise in world food prices in the early 1970s shifted the emphasis in discussion of UK agricultural expansion towards concern over the future price of food imports, and this led to more frequent use of the term 'self-sufficiency' in public debate. In this context, three kinds of price development were identified in Chapter 2: an expected longer-term rise in the real price of imported food; variability in the price of imported food; and the risk that imported food might suddenly, and unexpectedly, become very expensive or unavailable.

In studying the implications of these kinds of price movements, one point emerged clearly — often, self-sufficiency as such has little to do with the problem. The point is that for self-sufficiency to be directly relevant to agricultural policy, it must be the *proportion* of food supplies derived from imports which causes concern. Frequently, however, an expansion (or contraction) of agricultural output is argued as in the national interest on grounds which are in fact relevant irrespective of this initial degree of self-sufficiency. In the UK it has been possible for 'an increase in agricultural self-sufficiency' to be used as a synonym for agricultural expansion because, with overall food consumption increasing only very slowly, agricultural expansion has usually meant a corresponding change in self-sufficiency. But if it is specifically an increase in agricultural self-sufficiency which is regarded as desirable then this can be achieved by a reduction in average levels of food intake or a change in the balance of either food consumption or agricultural production, as well as by domestic agricultural expansion; agricultural expansion would not necessarily be the best option.

It is therefore important to distinguish between the problems thought to be associated with importing food which are related to the degree of agricultural self-sufficiency; those which are related to the appropriate size of the domestic agricultural sector, irrespective of a country's net trading position; and those which are perhaps related to neither. In Table 6.1 the left column lists five grounds on which agricultural expansion has been (or might be) advocated in the UK, two based on current import prices and three reflecting aspects of changes in the price of imported food. The former have not been considered in detail in this study. The latter three topics form the basis for discussion in Chapters 3 to 5.

Table 6.1

Import prices, agricultural expansion and self-sufficiency

Possible grounds for UK agricultural expansion	Relevant to determining appropriate size of agricultural sector?	Relevant to appropriate degree of agricultural self-sufficiency?
<hr/>		
Arguments based on current import prices:		
1. Resource efficiency	Yes	No
2. Contribution of balance of payments	Yes	?
Arguments based on changing import prices:		
1. Long-term movement in terms of trade	Yes	No
2. Food price instability	No	?
3. Security of food supplies	No	Yes

In considering the appropriate size of UK agriculture, any estimate based on comparative resource efficiency has nothing to do with self-sufficiency; it applies equally well to output which finds an export market as well as to that which replaces imports. When agricultural expansion is justified on grounds of contribution to the balance of payments, the argument again seems to be about what level of agricultural output meets the national interest. If a country experiences a balance of payments problem, and if one accepts the (doubtful) argument that direct stimulation of one sector can contribute to a solution, then extra output which generates foreign exchange can presumably be as helpful as output which saves foreign exchange.

Self-sufficiency could however be relevant to the balance of payments question if the need to import large quantities of food were itself seen as one cause of the tendency towards external deficit. Another reason why self-sufficiency could be relevant to a balance of payments problem is that, generally, government measures which restrict imports are regarded less severely by trading partners than those which subsidise exports; one problem of a policy which involves direct trade controls – even on balance of payments grounds – is the danger of retaliation by other countries. Such retaliation is less likely in the case of import substitution than in the case of export promotion (Ritson, 1970).

The argument that government action is required if a long-term rise in world food prices is expected (as with the argument that current import prices justify domestic agricultural expansion) has nothing to do with self-sufficiency; both depend on the view that national income is maximised if domestic output is

increased until the cost of producing additional output equals the alternative cost of imports. The arguments differ in that in one case it is presumably being argued that some impediment in the economy is preventing the sector from expanding to the size which is, in fact, merited by the country's comparative advantage. In the second case, the argument must be that some aspect of economic behaviour will prevent the sector from anticipating an expansion which is nationally justified in the light of some expected future change in the comparative advantage of the country.

Chapter 4 suggests that the UK can be adversely affected by fluctuating food import prices, but that this can perhaps be overstated, partly because of the uncertainty over the relation between consumer welfare and price fluctuations. The policy message of this conclusion is obscure. First, the overall size of the domestic agricultural sector seems to have little relevance to the problems of imported price instability, and the overall degree of agricultural self-sufficiency bears only marginal relevance to it. In Chapter 4 a number of possible approaches to avoiding the effects of imported food price instability were discussed, with emphasis on the trade tax/subsidy system. The importing country taxes imports when they are offered for sale at less than some predetermined domestic target price, and subsidises imports when they are priced in excess of the target price. In practice, importing countries have tended to set target prices towards the upper end of the range of import prices, so there are more taxes than subsidies but in principle it is possible for a pure stabilisation policy to be applied.

The exporting country can equally well stabilise domestic market prices by taxing exports when world prices exceed a domestic target price and by subsidising exports when world prices are lower. Again, the exporting country tends to choose a target price above the average level of world trading prices, so it ends up a net spender, whereas the importing country is a net revenue collector. This leads to the one link between the tax/subsidy stabilising system and self-sufficiency; the impact upon government revenue and expenditure. First, the further the country is away from self-sufficiency in food supplies - whether as net exporter or net importer - the greater will be the swings in government revenue and expenditure, and this can cause problems of national economic management. Second, because of the tendency to set target domestic prices in excess of the average level of world trading prices, as a country moves from net importer to net exporter, it moves from net gainer to net loser in terms of its national budget.

SECURITY

Of the five issues listed in Table 6.1, self-sufficiency is described as directly relevant to only one – security; and it is self-sufficiency (rather than the size of the agricultural sector) which is crucial here. With the quest for security in food supplies, at last, it seems, self-sufficiency comes into its own.

The general conclusion of Chapter 5 was that 'there is a very strong case for a food importing developed country to aim for a degree of agricultural self-sufficiency which is consistent with the ability to meet the minimum food requirements of its population from domestic sources in times of emergency'. However, 'when considering levels of domestic production in excess of those required to meet the minimum nutritional needs of the population, the case for increasing agricultural self-sufficiency to increase the security of food supplies rapidly evaporates'.

As with stability, an important consideration is the function of the world trading system, this time as a provider of security against failure of domestic food production. It was argued that whereas a level of agricultural self-sufficiency consistent with meeting minimum food requirements in an emergency did contribute to world food security, higher levels of self-sufficiency (not justified on other grounds) did not. In any case 'the benefit is now the convenience of being able to avoid abrupt adjustments in patterns of consumption following a sudden change in world market conditions – and there are other, probably less costly policies, which can achieve this objective'.

Considering the complexity of much of the argument in Chapter 5, the policy message seems, therefore, surprisingly straightforward. Turning the message into an appropriate policy is, of course, far from straightforward involving complex calculations and many uncertainties. In particular, there are two important questions to be resolved.

First, what do we mean by a minimum level of food supplies? The most obvious requirement in answering this question is the calculation of what level and combination of farm products can be converted into a nutritionally acceptable food supply for some given UK population. Equally important, and perhaps more difficult to estimate, is the safety margin required to account for the undoubted fallability of the production, processing and distribution system to achieve what is, in principle, possible.

Second, what level of existing domestic agricultural output is implied by the requirement that 'the nation should aim for a degree of self-sufficiency consistent with meeting the minimum requirements of the population from domestic sources in an emergency'? It would be a mistake to assume that food supply security is achieved simply by achieving an overall degree of self-sufficiency in major agricultural products of – say – 80%. The existing degree of self-

sufficiency is relevant to food security because of its effect on the ability to become self-sufficient in an emergency. But that is not the only thing which affects that ability. What is required is a contingency plan of which part, but only one part, would involve a policy designed to achieve some degree of self-sufficiency under normal circumstances. The execution of such a plan would involve: an increase in the overall level of output from domestic agriculture; a change in the balance of commodities produced; a change in methods of production, ie a change in input mixes; a change in the balance of food products derived from farm products; a change in the distribution of what is produced; depletion of food stocks while domestic production responds to the new situation.

The higher the normal level of output of the farm sector the easier it is to achieve rapidly some given overall level of output from domestic farming, and there are probably not too many problems involved in rapidly switching the balance of output — at least to the extent that this merely involves a change of land use within farming. But bringing about the required changes in the methods of production would be a different matter. In the kind of world environment which the security plan is designed to meet, some farm inputs are likely to be in as scarce supply as food products. There is little point, therefore, in boosting domestic agriculture and raising self-sufficiency if the expansion is based on the most efficient production methods relative to the existing (normal) balance of input prices. Indeed such a policy might make it more difficult to bring about the changes required in production methods in an emergency when a very different input mix might be required. The implication is that the government should perhaps subsidise the kind of production systems thought likely to be necessary in an emergency, rather than encourage a general expansion on the basis of existing technology and input mixes.

UK FOOD IMPORTS UNDER THE CAP

This study has deliberately excluded any discussion of prospects for world food supplies; much has been written in recent years on this topic but no clear consensus concerning the likely future patterns of world food prices has emerged. From the point of view of UK agricultural strategy the issue is of considerable importance. However, the intention of this paper was to deal with an area about which much less has been written — the implications of some possible alternative developments in world food prices of the kind which might be regarded as adverse for a major food importing country. As indicated earlier, it was accepted that this would require a largely theoretical study and that much of the argument would be relevant to any major food importing country. Never-

theless, there is one aspect of the prospects for UK food imports that does require attention in this paper, because it may modify the kind of policy response that would be recommended — the effect of British membership of the EC.

Membership of the EC affects UK food supply policy in three ways: first, it may impose constraints on the extent to which the country can take independent agricultural policy action; second, it may alter the kind of import price development experienced; third, certain kinds of policy action may more suitably be taken at a Community rather than a national level. In all three cases the most important effect of EC membership is that the price paid for imported food is largely determined by ministerial decision at Community level.

Viewed from the perspective of UK food supply policy the CAP represents a kind of supply agreement; the UK has in effect agreed to purchase from other member states, at a negotiated price, such part of the country's import requirements of CAP products as the rest of the EC chooses to provide. The UK has further agreed to transfer to the Community budget a sum equal to the excess of the negotiated price over world trading prices on whatever produce it continues to import from third countries. It has also agreed that UK farmers should receive a price for what they produce roughly equal to this negotiated price.

Originally, it was thought that the UK would have only a very limited say in the level of this negotiated price — which does not make it look a very good supply agreement for the UK, at least when viewed in isolation — but the development of Europe's green money system (see for example Swinbank, 1978; Ritson & Tangermann, 1979) has given the UK a considerable degree of freedom over the prices paid for imported food. It has not, however, given it the freedom to pay a different price to domestic farmers, nor to alter the relationship between product prices. The ability to manipulate the price received by domestic farmers, independent of import prices, would normally be one of the most powerful policy mechanisms used by a government which was concerned to influence the size and balance of domestic agriculture. Nevertheless, the government does retain considerable power to influence the prosperity of domestic farming by other policy mechanisms; the main constraint is probably over the balance of output rather than the overall level of output.

How does the presence of this supply agreement affect the arguments in this paper? The conclusions relating to Chapter 3, concerning the appropriate policy response to an expected long-term rise in the price of imported food, are unaffected, but the policy-maker must in this case try to predict the evolution of CAP support prices (if he believes that the UK will remain a member of the EC and that the CAP will not change radically) rather than the evolution of the world market.

Two observations can be made. First, any movement towards harmonisation of prices between member states within the CAP (regardless of how such a harmonisation is brought about) seems likely to involve some further price increases for the UK. Therefore, the general development of the EC (particularly the progress towards monetary and economic union, and thus the future of the green money system) could have important implications for the long-term, or at least medium-term, development of UK food import prices.

Second, decisions over the level of farm product prices in Europe are not totally immune from developments on world markets; the evolution of the terms of trade between agricultural and other products on world markets does not become entirely irrelevant. Although European policy makers have tended largely to ignore world trading prices when setting CAP prices, the policy itself is coming under increasing strain because of the cost of surplus disposal. This cost is directly linked to the gap between world and EC prices, and so it is reasonable to expect a general rise in world food prices to ease the problem of surplus disposal and, consequently, reduce the pressure on the EC Council of Ministers to restrain CAP price increases. Nonetheless, the relationship between world food prices and CAP support prices is still weak and since CAP prices have tended to be well in excess of world trading prices for food products, an expected long-term rise in world food prices is likely to have much less effect on UK food price imports with Britain a member of the EC than if operating an independent agricultural policy.

The CAP is a classic example of a trade tax/subsidy stabilising policy, with domestic target prices set so high that virtually all the stabilising is done by variable taxes on imports of deficit products and variable subsidies on exports of surplus products. The stabilising role of the policy is not built into the system for cases where world prices rise above domestic target prices to the same extent as it is for the normal case of lower world prices. The capacity of the CAP to stabilise in times of high world prices has been tested only once, during the world commodities boom when some world food prices rose above CAP levels. For surplus commodities — particularly wheat — the system was quickly thrown into reverse, exports were taxed, and EC market prices did not rise as much as world prices. For deficit commodities only sugar imports (the EC was then less than 100% self-sufficient in sugar) were subsidised. So the evidence suggests that if world prices again moved above CAP prices, import subsidies would probably not be a major feature, but export taxes would; and since the EC is nearly self-sufficient for most major farm commodities (see Table 6.2) the reluctance to subsidise imports is unlikely to reduce greatly the price stabilising role of the policy — particularly since domestic target prices seem likely to be usually in excess of world prices.

Table 6.2

Degree of self-sufficiency (%) in selected agricultural products 1973–1976

Product	UK	'The Nine'
Wheat (soft)	61	108
All cereals	68	91
Potatoes	93	100
Sugar	29	95
Vegetables	75	94
Fruit	34	80
Milk powder	151	135
Cheese	64	104
Butter	15	100
Eggs	98	100
Beef & veal	77	100
Pork	65	99
Poultry meat	99	103
Total meat	73	96
Vegetable oil	3	24
Oilcake	2	6

Source: Eurostat (1978)

Stabilising domestic markets is, therefore, an aspect of agricultural policy which can largely be viewed at a Community level and remarks in Chapter 4 concerning the doubtful merits of such a policy are most appropriately viewed at European level. The extent to which the CAP destabilises world food prices has increasingly come to be recognised and the EC is under considerable international pressure to take action to change this.

Looking at the issue from the narrow point of view of the British interest, however, the CAP provides stability in the price of food supplies but does so in the form of an agreement to supply produce at a more or less fixed price. This differs from the situation which would occur if the UK were to apply the variable import tax policy independently, in that the foreign supplier rather than the UK exchequer receives the difference between the UK domestic target price and world prices. This is offset to some extent on those occasions when the world price moves above the UK domestic target price, when UK import subsidies are not required.

There is one other peculiar feature of the CAP as a price stabilising system for the UK domestic market, namely that prices are fixed, and thus – in principle – stabilised, in terms of foreign currency. A strict interpretation of the CAP therefore implies that fluctuations in sterling's rate of exchange should result in equivalent fluctuations in CAP support prices in the UK. In fact, this

represents a much more severe impact upon farm product prices than exchange rate movements usually mean for non-farm traded goods, and partly for this reason, the green rate system has evolved. By holding the green pound constant in the face of a fluctuating sterling exchange rate, farm product prices are stabilised in domestic currency.

The impact of membership of the EC on the security of UK food supplies is ambiguous. Table 6.2 shows that, to the extent that self-sufficiency is relevant to supply security, the EC certainly has the capacity to provide supply security to the UK. Whether it would do so is a matter for speculation. The period 1973 to 1974, when the UK received some food products from EC countries at less than world prices, cannot really be classified as anything other than 'stability'; nonetheless, the Community was quick to restrain domestic prices.

Much depends on the point at which world food prices move from a level still regarded as an example of instability to a level which begins to threaten the security of the importing country's food supplies. A world economic environment in which the UK found it impossible to purchase enough food (at world prices) to keep all its population alive (Phase 3 in Chapter 5) also seems to be an environment in which membership of the EC, given its present state of development, would be meaningless. When, however, the cost of food imports implies only what might be termed difficult adjustments in consumption patterns (Phase 1), then one might expect the CAP to provide a significant proportion of UK imports at less than world prices. This argument strengthens the conclusion of Chapter 5 that the policy implications of the desire for security for food supplies are that the country should aim for a level of self-sufficiency consistent with the ability to meet the minimum nutritional requirements from domestic sources in times of emergency – but that the security argument does not, in itself, seem to justify a higher degree of self-sufficiency than this.

If one accepts that the security of food supplies primarily concerns the ability to feed the nation in an emergency then, given the present stage of development of the EC, this is a national matter which requires national solutions. At some future date, European union might reach a state of development such that one could envisage food supply security applying to the EC as a whole. At present, this seems a long way off.

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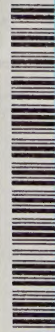
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